Annual Report

Archaeological Survey, Evaluation, and Mitigation:
Donnelly Training Area, Fort Wainwright, Alaska 2006

2007

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Figure 1. 2006 DTA Field Crew

1.0 Introduction

In 2006, the U.S. Army Alaska (USARAK) and United States Army Garrison, Alaska (USAG-AK) undertook the development of several proposed projects that triggered an archaeological and cultural resources analysis of proposed areas of potential effect. This report details the archaeological review and analysis that was conducted for each undertaking on lands at Donnelly Training Area (DTA), Fort Wainwright (Figure 1). The survey was conducted by the USAG-AK and the Center for Environmental Management of Military Lands (CEMML, Colorado State University).

Survey and sub-surface testing were conducted following procedures defined in USAG-AK archaeological methodology (Robertson and Proue 2006) and Integrated Cultural Resources Management Plan (ICRMP; Office of History and Archaeology 2001). Where archaeological sites were identified within a project's Area of Potential Effect (APE), evaluative testing was conducted to determine eligibility for listing in the National Register of Historic Places (NRHP) based on National Register Criteria detailed in 36 CFR 79 and pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800).

Archaeological field crews, comprised of employees of CEMML, conducted surveys of areas potentially impacted (both directly and indirectly) by proposed undertakings and conducted the testing to determine eligibility for listing in the NRHP. Three archaeological survey crews, each consisting of four archaeologists, conducted the work at the DTA.

1.2 Setting

The DTA is located in central Alaska, north of the Alaska Range in the Tanana River Valley. The Post lies 120 miles south of the Arctic Circle near the city of Delta Junction. The DTA consists of the West and East Training Areas and three outlying training sites: Gerstle River Training Area, Black Rapids Training Area, and Whistler Creek Rock Climbing Area. For the purposes of this report, only the DTA East and West are discussed. The DTA West is an 894 square-mile parcel bounded by the Delta River to the east and the Little Delta River to the west. It covers approximately 571,995 acres. The East Training Area is an 81 square-mile parcel stretching east of the Delta River to Granite Creek. It covers approximately 51,590 acres.

The DTA has the northern continental climate of interior Alaska, which is characterized by short, moderate summers; long, cold winters; and low precipitation and humidity. Weather is influenced by mountain ranges on three sides that form an effective barrier to the flow of warm, moist maritime air during most of the year. Surrounding upland areas tend to aid drainage and the settling of cold arctic air into the Tanana Valley lowlands (Natural Resources Branch 2001).

The Alaska Meteorological Team (AMT) at the Central Meteorological Observatory, Fort Greely and DTA monitors weather at the Post. Average monthly temperatures range from -6.4ºF in January to 60.0ºF in July with an average annual temperature of 27.4ºF. The record low temperature is -63ºF, and the record high is 92ºF. The average frost-free period is 95-100 days (based on 27 years of AMT data).

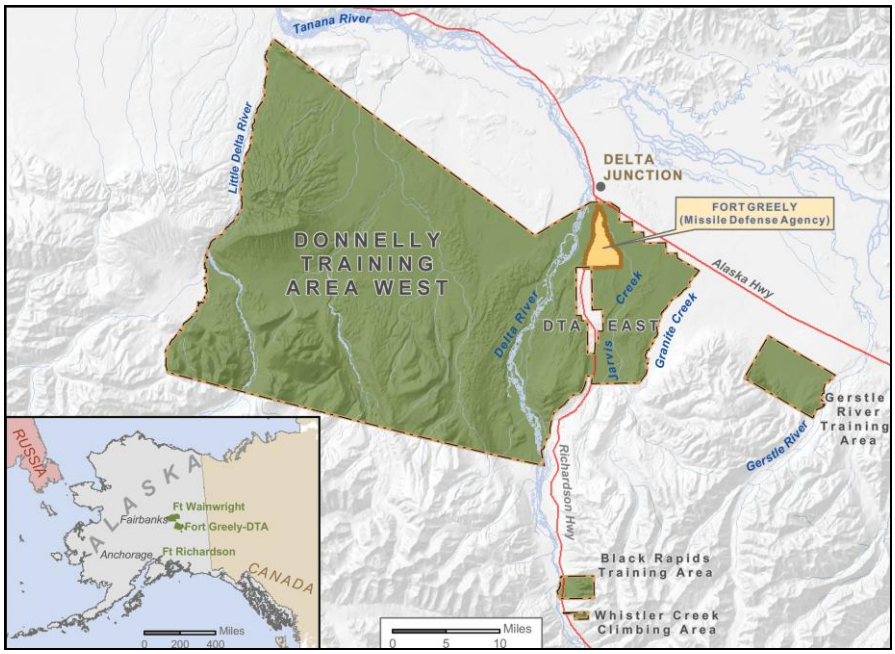

Figure 2. Location of Fort Wainwright's Donnelly Training Area

Prevailing winds are from the east-southeast from September through March and from the west, southwest, or south from April through August. Average wind velocity is 8.2 miles per hour (mph). The greatest wind speeds occur during winter with a high of 104 mph recorded in the month of February. Winds are 5 mph or less only 13.6 percent of the time, and wind speeds greater than 60 mph have been recorded in every month. Thunderstorms are infrequent and occur only during summer (based on 20 years of AMT data) (Natural Resources Branch 2001).

Average annual precipitation is 11.12 inches, which falls over 90.4 days, mostly during summer and early fall. Average monthly precipitation ranges from a low of 0.24 inches in April to a high of 2.38 inches in June. Average annual snowfall is 40.5 inches with a record 99.7 inches in 1945 (based on 27 years of AMT data) (Natural Resources Branch 2001).

2.0 Literature Review

2.1 History

The DTA lands fall within an area occupied at the time of Euro-American contact by Lower-Middle Tanana Athabascans (Andrews 1975:177; McKennan 1981:564; Mishler 1986). Traditional settlement patterns focused on a widely mobile seasonal round with the fall caribou hunt playing a pivotal role in subsistence preparations for the winter, while summer efforts included activities at fish camps, berry and root collecting, and sheep hunting (McKennan 1981:565). These activities frequently had a communal focus with several local "bands" connected by common interest, geography and intermarriage. Despite anthropological attempts to define "boundaries" for the peoples living in the lower Tanana River Valley, natural terrain served as the only definable "boundary" to settlement patterns (McKennan 1981).

As Euro-American traders, miners, missionaries, and explorers moved into the Tanana River Valley, the traditional lifestyles of local Athabascan groups were disrupted. Access to trade goods and the development of the fur trade not only affected traditional material culture, but also began to dramatically affect subsistence activities and settlement patterns. Similarly, the introduction of missionaries to the Interior of Alaska profoundly affected traditional social organization. The establishment of mission schools for Native children and the doctrine of new religious beliefs contributed to an erosion of traditional settlement patterns and practices (McKennan 1981).

In 1898, the discovery of gold in the Tanana uplands began a rush of Euro-American settlement into the Tanana River Valley. As the economic importance of the Tanana Valley increased, the need for reliable transportation routes and communication systems rose in tandem. Existing trails, such as the Bonnifield, Donnelly-Washburn, and Valdez-Fairbanks trails saw increased use and development in the first decade of the 20th century. This increase in activity also resulted in the establishment of several roadhouses and posts. In 1906 Congressional appropriations led to improvement of the Valdez-Fairbanks trail, which crosses the Alaska Range south of Delta Junction, following the Tanana River to Fairbanks. Completion of the Alaska Railroad in 1923 followed by construction of the Alaska Highway in 1942 firmly tied the Alaskan interior to the outside.

Development in the Alaskan interior increased dramatically with the onslaught of World War II and the subsequent military build-up in Alaska. The development of airfields near Delta Junction (Fort Greely), Fairbanks (Ladd Field, later Fort Wainwright), and 26 miles southeast of Fairbanks (Eielson Air Force Base) was particularly significant. These locations began as lend-lease bases and cold weather testing centers, but soon expanded with the increased need for military support during World War II and later, the Cold War.

2.2 Prehistory

As noted by John F. Hoffecker (1996), Beringian archaeology is in an early phase of development, with archaeologists on both sides of the Bering Strait still working on the construction of cultural chronologies. That being said, it should come as no surprise that there is substantial debate involved in the creation of a prehistoric chronology for Interior Alaska. This section offers a brief comparison of two different views on the chronology:

the chronology present in Alaskan archaeology in some form since the 1960s that has been modified over the years and one proposed by eminent Alaskan archaeologist Charles Holmes in the mid-1990s.

Traditional chronologies of Alaskan prehistory divide time into periods based on tool forms. The broadest classification divides Alaskan prehistory into three traditions: the American Paleoarctic Tradition, the Northern Archaic Tradition and the Athapaskan Tradition. Because of the almost continuous flux involved with the many subcategories of an Alaskan prehistory, this section will discuss the broadest classification.

- The American Paleoarctic Tradition (12,000-6,000 BP). This tradition includes the Denali Complex originally defined by West (1967). It includes distinctive microblade cores, core tablets and their derivative microblades, large blades, biconvex bifacial knives, certain end-scraper forms, and burins. West (1981) later stated that the Denali Complex is a regional variant of the American Paleoarctic Tradition defined by Anderson (1970). Also included within this tradition is the Chindadn Comples; Chindadn, so-named by Cook (1969), is from the Athapaskan word for "ancestor." The Chindadn Complex is also called the Nenana Complex. The defining characteristic of the Chindadn Complex is the presence of Chindadn points, bifacially flaked triangular or tear dropped shaped projectile points. Scholars have at times (e.g. Dixon 1999) situated the Nenana Complex before the American Paleoarctic Tradition in terms of chronology. However, there is some debate as to whether or not the Chindadn Complex definitely predates the Denali Complex, so for simplicity's sake they are both included in the American Paleoarctic Tradition.

- The Northern Archaic Tradition (6,000-2,000 BP). The hallmark of the Northern Archaic Tradition is the presence of side-notched points (Anderson 1968b). There are generalized resemblances between this tradition and the Archaic cultures of the Great Plains of the lower 48 states, although it is uncertain that any of the Northern Archaic traits, other than most likely the side-notched points, originated outside of the western subarctic region (Clark 1992). Anderson (1968) correlated the advent of Northern Archaic technologies with the full establishment of the taiga forest, comparing these technologies to those of the forest-oriented Archaic cultures of the lower 48 states.

- The Athapaskan Tradition (2,000 BP-1880 AD). The Athapaskan Tradition includes cultures generally believed to be the ancestors of the Athapaskan tribes who occupy Interior Alaska today. The Athapaskan Tradition includes a reorganization of raw materials, which de-emphasized stone tool making and increased the emphasis on the manufacturing of items from native copper and organic materials (Dixon 1985).

An intermediary period known as the Late Denali Complex was once suggested (e.g. Dixon 1985) as taking place after the Northern Archaic Tradition, during which microblades reappeared. However, it is now generally accepted that the Northern Archaic Tradition includes microblade technology.

Holmes (1995, 2001) has proposed an alternative chronology for the Tanana valley. Holmes avoids some of the complications of earlier attempts to create a chronology, in that he does not focus solely on artifact form. Instead, the time periods he suggests are

arranged chronologically and "divided according to environmental and cultural criteria" (Holmes 2001:156). These periods are: the Beringian Period, the Transitional Period, the Early Taiga Period, the Late Taiga Period, and the Athapaskan Period (Holmes 1995). Holmes' periods encompass the traditional typologies and situate them within an environmental framework to create a chronology for Interior Alaskan prehistory.

- During the Beringian Period, defined as greater than 11,000 years BP, there was still a land connection between Alaska and Siberia and as of yet no boreal forest in Beringia. Some artifact assemblages from this period lack microblades; others have them. This difference may be attributable to differences in site environment, function, or seasonality. Holmes proposes the term "East Beringian Complex" to describe these earliest assemblages.
- The Transitional Period, occurring from 11,000 to 8,500 yr. BP, is marked by major environmental changes: the land connection to Siberia disappears, animals become extinct, substantial climatic changes occur, and forestation begins. Around 9,000 BP, the spruce-birch forest replaced the shrub tundra.
- The Early Taiga period, 8,500 to 5,000 BP, marks the full establishment of the boreal forest. During this period, the American Paleoarctic Tradition gives way to the Northern Archaic Tradition.
- The Middle Taiga period, from 5,000 to ca. 2,500 yr. BP, sees a continuation of the artifact types of the Northern Archaic Tradition, which include microblades and burins.
- The Late Taiga period, ca. 2,500 yr. BP to modern, encompasses the disappearance of microblade technology from the archaeological record. It is also during this period that we see the beginning of the Athabaskan tradition in Alaska, which leads the technology shift outlined above and to ethnically recognizable Athabaskan groups.

This combination of chronological, environmental and cultural criteria provides flexibility that is lacking in more traditional chronologies, which are divided according to artifact types.

2.3 Archaeology

Twenty-four archaeological investigations have been conducted on DTA since 1963, identifying approximately 400 sites to date (Table 1). Twenty of these sites comprise the Donnelly Ridge Archaeological District, which is within DTA East. The majority of the archaeological surveys conducted in DTA have been limited to DTA East, which comprises 25 percent of the entire DTA.

Frederick West conducted the first regional survey of the Alaska Range foothills in the 1960s (West 1967). His survey at DTA included the Donnelly and Delta moraine physiographical areas. West located the twelve sites that comprise the Donnelly Ridge Archaeological District. This collection of sites has played a significant role in defining the Denali Complex of the American Paleoarctic Tradition.

In 1978, a reconnaissance-level survey was conducted in various areas of Fort Greely and DTA, resulting in the discovery of 62 sites (Holmes 1979). A 1979 survey located four sites (Bacon and Holmes 1980). Northern Land Use Research, Inc. conducted

limited archaeological surveys in various areas of DTA during the summer of 1998, resulting in the identification of sixteen additional sites (Higgs et al. 1999). Other smaller surveys have also been conducted for specific project areas. All of the identified sites are located in one of three physiographic settings: high points, bluffs or terraces overlooking a major river or site drainage, or lake margins. There is an inherent bias in these findings, however, as archaeological investigations have frequently focused on high probability settings such as these.
USARAK began archaeological surveys of large blocks of land within DTA East in 2002 to address proposed infrastructure construction on DTA East. Unlike previous surveys, these provided 100 percent pedestrian coverage of areas under consideration and an aggressive sub-surface testing strategy. These surveys (conducted 2002-2006) covered 58,900 acres and identified over 290 new sites of which approximately 110 have been evaluated for eligibility for listing in the NRHP. This included one site that may be from the Athabascan Tradition or Early Contact period, which was determined eligible for the NRHP and one historic era site (possibly relating to Transportation and Infrastructure) that has not yet been evaluated for eligibility.

The lands within DTA have likely supported human populations for 10,000 to 12,000 years. Because it was ice-free during the Wisconsin glaciation, interior Alaska contains the oldest verifiable prehistoric remains in the state and is significant in understanding the peopling of the New World. The oldest radiocarbon date for any item found on DTA is 8,555 (± 380) years BP, from charcoal at site XMH-00297. Some undated material resembles artifacts dating back to 12,000 BP.

Table 1. Archaeological survey of DTA East [1]

Year	Researcher	Survey Location	Result
1963-64	West	Various locations on DTA	25 archaeological sites found
1977	Rabich and Reger	XMH-00253	1 site investigated
1979	Bacon	XM-1 Tank Range	No archaeological sites found
1979 [2]	Holmes	Various locations on DTA	62 archaeological sites found
1979 [2]	Bacon and Holmes	Various locations on DTA	6 archaeological sites found
1980a	Steele	Bison Trail DTA East	3 archaeological sites found
1980b	Steele	Squad Assault Range DTA East	No archaeological sites found
1980	Bacon	Cantonment	No archaeological sites found
1982	Steele	Various locations on DTA	No archaeological sites found
1982	Steele	Donnelly Dome Quarry Site	No archaeological sites found
1983	Steele	Texas Range Powerline	1 archaeological site found
1985	Kotani	XMH-00297	1 site investigated
1988	Reynolds	Donnelly Dome WACS	1 archaeological site found
1992	Staley	Various locations on DTA	No archaeological sites found
1995 [2]	Gamza	Sullivan's Roadhouse	1 site investigated
1998 [2]	Higgs et al.	Various locations on DTA	16 archaeological sites found
2002	Goodman	Powerline on DTA East	No archaeological sites found

2002	Hedman et al. 2003	Texas Range, Donnelly DZ, Eddy DZ	110 archaeological sites found [3]
2003	Robertson et al. 2004	Eddy DZ	104 archaeological sites found [3]
2004	Raymond-Yakoubian and Robertson 2005	North Texas and Eddy DZ	10 archaeological sites found
2005	Robertson et al. 2006	Texas Range, DTA Training Areas	39 archaeological sites found

[1] Less than 1 percent of the surveyed area represented in this table was conducted on DTA West.
[2] A portion of this survey was conducted on DTA West.
[3] Some of these sites represent previously reported sites whose locations were not well documented and which were relocated to obtain more accurate data.

3.0 Methodology, Survey and Evaluation

To further build baseline knowledge of the archaeological resources on Army lands in Alaska and to meet Section 106 obligations, USAG-AK pursued a comprehensive inventory strategy in 2006.

3.1 Survey Methodology

To further build baseline knowledge of the archaeological resources on Army lands in Alaska and to meet Section 106 obligations, USAG-AK pursued a comprehensive inventory strategy in 2006. This resulted in an intensive, full-coverage survey of survey units. Unless the survey area was stratified, all accessible areas of each APE were subjected to pedestrian survey, and all high probability locations were subjected to subsurface survey when practical. Areas considered inaccessible included high angle slopes (greater than 40 degrees) and wetlands. Stratification of survey areas was based on previous research, distribution of known sites, and knowledge of the survey area terrain. Stratification resulted from an understanding of the cultural resources that were expected to be encountered in the survey area and the demonstrated distribution of site types among high and low probability terrain. This methodology section of the annual report documents justification for survey stratification and elimination of portions of the APE from field survey.

3.1.1 Pedestrian Survey Methods

All areas not eliminated by pre-survey reconnaissance or classified as wetlands or steep slopes were surveyed. Areas were surveyed using a transect interval of no more than 20 meters. Transect intervals decreased in areas of dense vegetation to insure a visual inspection of the entire survey area. Transect intervals also decreased in areas deemed to have a high potential for containing archaeological sites. Transect intervals below the 20 meter minimum were decided in the field by the field crew leader in consultation with the appropriate Post Archaeologist. Transect survey units were partitioned according to existing roads and trails where possible. When roads did not provide for practical unit boundaries, a one square kilometer work unit was used.

All areas of high potential for subsurface material were systematically shovel tested. There were approximately 20 meters between tests, but at times test intervals were closer. An example of an area that may be tested in 20 meter intervals is a long ridgeline or large landform that offers a number of undifferentiated high probability locations. A shorter test interval will be used to test small, isolated, high probability landforms such as an isolated knoll, prominence with a view, lakeside terraces, stream mouths, or level benches adjacent to steeper slopes (this list is not complete and is meant as an example of locations that may be tested intensively). Shovel tests were square or round and measured at least 30cm in diameter and were excavated to the maximum depth possible. All soil removed was screened through ¼ inch hardware cloth. The number of tests and approximate location of testing was recorded by crew leaders. Oakfield soil probes were used when necessary to identify sites and features or to delineate site boundaries.

Crew leaders used GPS, topographic maps, and air photos to record field data. All spatial data was entered into GIS data files. Crewmembers recorded their activities in field notebooks. Data recorded daily included date, crew names, crew leader name, activity (e.g. survey, shovel testing, site sampling), and details of crew and individual tasks and activities. Recordation of incidental observations regarding weather

conditions, technical problems, task efficiency, and task and project coordination was also encouraged.

3.1.2 High and Low Probability Locations

Surveys carried out by USAG-AK archaeologists at DTA East in 2002 to 2006 (Hedmen et al. 2003; Raymond -Yakoubian and Robertson 2005; Robertson et al. 2004; Robertson et al. 2006) indicated that important environmental aspects contributing to site placement included the view shed, elevation relative to the immediately surrounding terrain, and distance to water. Lake margins and the tops of small knolls and ridgelines provided the highest probability locations for archaeological sites. Elevated portions of clear streams and anadromous fish streams, stream confluences, and islands are also considered high probability locations. Other high probability locations included benches adjacent to steeper slopes and leading edges of terraces.

Low probability terrain on DTA lands included flat expanses of spruce forest that lack water, wetlands, and slopes greater than 40 degrees. Full coverage surveys failed to locate any archaeological sites in these settings.

3.1.3 Prehistoric Site Designation

The minimum required for designation of a prehistoric archaeological site is the presence of a single artifact on the ground surface, a single positive shovel test, or a single identifiable feature such as a house depression, cache pit, or hearth. "Sites" defined on the basis of sub-surface finds will minimally include a single identifiable artifact or feature such as a flake, manuport, or hearth. Site boundaries are determined during the evaluation phase.

Once a site was identified, a USAG-AK site form was filled out, a sketch map was drawn using compass and tape, and a permanent datum nail was installed. Aluminum survey caps will be placed on a length of rebar and inserted so that approximately 5cm extends above the ground surface during the evaluation phase. Survey caps will be stamped with the site's AHRS number. When time allowed, site boundaries were determined during the site identification phase (see "Site Evaluation Procedures").

3.1.4 Historic Site Designation

Historic archaeological sites are those sites that are greater than 50 years of age that reflect historic period activities and could not otherwise be designated as a prehistoric site. Most standing structures that are attributable to the military use of these lands lie beyond the purview of archaeological inventory. USAG-AK lands contain several property types that are in excess of 50 years of age. Examples include homesteads and mining remains, trap line cabins, guide cabins, aircraft wrecks, roadhouse remains, early trails, and early communication systems. Any property deemed in excess of 50 years in age will be documented as a site in the manner prescribed in this methodology.

3.1.5 Artifact Collection

Artifact collection was limited to artifacts retrieved from shovel tests, important diagnostic artifacts found on the surface, and artifacts that were in immediate danger of destruction. All artifacts collected were recorded on a site map. Artifacts collected were bagged and labeled in accordance with USAG-AK and University of Alaska Museum standards.

3.1.6 Threatened Resources

In the case of cultural material being in immediate danger of destruction, USAG-AK's Cultural Resource Manager is notified. Appropriate mitigation measures are determined in consultation with the Alaska State Historic Preservation Officer and interested Tribal Governments. This did not occur during the 2006 field season.

3.1.7 Human Remains

No human remains were encountered during the 2006 field season. If any human remains, sacred objects, funerary objects, or objects of cultural patrimony had been encountered, they would have been avoided. Work would have stopped in the immediate vicinity of the find, measures would have been taken to protect remains, and the Cultural Resource Manager would have been notified immediately so that appropriate action was taken.

3.2 NRHP Eligibility Evaluations

The site Evaluation Phase occurred once the entire APE had been inventoried. This phase focused on evaluating identified sites for eligibility for inclusion in the NRHP.

3.2.1 Archaeological Sites

As site testing is inherently destructive, the minimum amount of testing necessary to make eligibility determinations was undertaken. Evaluations included the minimum number of shovel tests necessary to determine the aerial and sub-surface extent, site integrity, and the nature of the information the site may yield. Shovel tests followed the standard dimensions outlined previously and were excavated and recorded in a manner that allowed for determining the depth of cultural material, thickness of deposits, and the location of cultural material concentrations across the site. Evaluation Phase shovel testing was recorded on USAG-AK shovel test forms. All excavated soil was screened through ¼ inch hardware cloth. All sub-surface testing was mapped with compass and tape. Locations of positive tests and site boundaries were clearly indicated on both a USGS 1:63,360 and a DMA 1:50,000 map as well as on a site sketch map. All test excavations used 10cm arbitrary levels unless clear stratigraphy dictated otherwise. Each level was recorded on USAG-AK excavation level forms. These forms, along with the USAG-AK photo log, provide for complete documentation of plan drawings, profile drawings, level photographs, soil level descriptions, artifact descriptions, and feature descriptions. Artifact collection, care, and labeling were performed to USAG-AK standards. Artifacts will be curated at the University of Alaska Museum, under an existing Memorandum of Understanding (MOU).

3.2.2 Determinations of Eligibility

As many of the recorded sites on USAG-AK lands are small, shallow lithic scatters and discrete surface scatters, evaluation at times required only shovel testing and a thorough examination of the ground surface to determine eligibility. Typically, the most important factor in evaluating eligibility for these types of sites is how well the site satisfies Criterion D of the National Register Criteria for Evaluation (research potential). As such, integrity of the site is very important. Even very small sites and sites lacking datable material are very important for understanding Interior Alaskan prehistory and local site formation processes. In cases where site integrity was difficult to assess, 1m x1m test units were excavated strategically across the site to determine the extent of any site

disturbance and the presence, location, and densities of buried cultural material. Once the cultural deposit was characterized and the integrity assessed, a determination of whether the site contains information that can significantly contribute to important research questions was addressed.

Results of the Evaluation Phase work at each site were presented in a formal Determination of Eligibility report. These reports will be submitted to the Alaska State Historic Preservation Officer for review and concurrence and then distributed among interested parties. These reports contain a complete description of the evaluation methodology, site characteristics, level of integrity, and discussion of the research potential of the site. Reports include all pertinent maps, photos, and tables.

Figure 3. Field technician evaluating a site

4.0 Methodology, for Data Recovery (Mitigation Site XMH-00874)
During the 2006 field season, USAG-AK began an archaeological excavation to recover data as mitigation for an adverse effect to site XMH-00874. In order to address all of the goals of the project, a range of investigative techniques was employed.

4.1. Areas of excavations

Excavation was carried out in two areas in order to best assess the nature of the site and any associated features and in accord with the project goals and research questions. Area 1 is located on the portion of the site that will be directly impacted by construction. A minimum of 5% of the area to be directly impacted by construction will be excavated. Area 2 is located on the portion of the site that will be capped to protect against indirect impacts. A minimum of 0.5% of the area to be capped will be excavated. Excavation will continue in the 2007 field season.

4.2.1 Excavation methods

Excavation was primarily conducted by hand with trowel and brush. Skim shoveling was used in excavating non-cultural levels after the location of cultural deposits had been determined by trowel excavation. No mechanical means of excavation were used.

4.2.2 Recording excavation levels

All excavation units used 5cm arbitrary levels unless clear stratigraphy dictated otherwise. All levels were recorded on USAG-AK excavation level forms. These forms, along with the USAG-AK photo log, provide for complete documentation of the level including plan drawings, profile drawings, level photographs, soil level descriptions, artifact descriptions, and feature descriptions.

4.2.3 Recording artifact locations

All artifact locations were recorded in three-dimensions with the assistance of a Total Station. USARAK used a Sokkia Set6 Total Station and a data collector for recording artifact locations and other site mapping for this project.

4.2.4 Screening and back-dirt

All excavated soil was screened through 1/4 or 1/8 inch hardware cloth. Back-dirt from Area 1 will be used as a pre-cap in Area 2 to help protect that portion of the site from secondary impacts during the construction in Area 1. Back-dirt from Area 2 will be returned to excavation units.

4.2.5 Faunal and macrobotanical assemblages

All faunal and macrobotanical assemblages derived from the excavated areas will be examined and processed. Any macrobotanical remains that have the potential of being palaeoenvironmental materials will be analyzed.

4.2.6 Processing, conservation, and analysis

Full processing, conservation, and analysis of artifact assemblages will be undertaken. If any fragile or unstable organic artifacts are recovered during excavation, appropriate measures will be taken to stabilize and protect these artifacts. A professional conservator may be employed to help in the stabilization and transportation of such artifacts.

5.0 Undertakings

USARAK proposed one major range development project, and USAG-AK proposed several smaller projects on lands at Fort Wainwright's DTA. The DTA's major range development project, the Battle Area Complex (BAX), is a range designed for gunnery training of vehicle-mounted weapon systems and dismounted infantry platoons, either independently of or simultaneous with supporting vehicles (Figure 5).

The smaller projects within the DTA include: Wills Range Complex Maintenance and Upgrades, Donnelly Drop Zone Improvement Project, a Gravel Source, and road upgrade projects (Dome Road and Old Richardson Highway Maintenance) (Figure 5). Four sites also were evaluated for eligibility to the NRHP in 2006, pursuant to 36 CFR 800. Two of these evaluated sites were associated with the BAX project.

Archaeological surveys of the proposed projects were conducted in May, June, and July of 2006. A total of 26 new archaeological sites were identified and recorded in the areas surveyed during the 2006 summer field season. Archaeological excavation to recover data as mitigation for an adverse effect to site XMH-00874 was conducted in July, August, and September of 2006.

Archaeological field crews, comprised of employees of the CEMML, conducted surveys of areas potentially impacted (both directly and indirectly) by proposed undertakings and also conducted the testing to determine eligibility for listing in the NRHP, as well as conducted excavation to recover data at site XMH-00874

Three archaeological survey crews, each comprised of four archaeologists, conducted the work in the DTA. The DTA Archaeologist, Aaron C. Robertson was the supervising archaeologist for these projects.

Figure 4. Field technicians surveying for sites on DTA

Figure 5. Restricted Figure. Removed for public use of document.

Table 2. General survey results for DTA

	2002	2003	2004	2005	2006	**Total**
Total Areas of the Donnelly Training Area	657,000	657,000	657,000	657,000	657,000	**657,000**
Areas Not Accessible for Archaeological Survey*	139,000	139,000	139,000	139,000	139,000	**139,000**
Areas Accessible for Archaeological Survey	518,000	518,000	518,000	518,000	518,000	**518,000**
Number of Field Crew	16	16	8	20	12	**72**
Total Acreage Surveyed	10,872	29,404	2,223	10,118	6,381	**58,998**
Recorded Archaeological Sites	100	116	10	39	26	**291**
Number of Sites Evaluated for Listing in NHRP	20	5	32	51	4	**112**
Number of Sites Eligible for Listing in NHRP	8	1	19	15	2	**45**
Number of Sites Excaved for Data Recovery and Mitigation	0	0	0	0	1	**1**
Percentage of Accessible Land Surveyed	2%	6%	<0.5%	2%	1%	**11%**

5.1 Battle Area Complex (BAX)

The BAX is designed for gunnery training and would meet qualification requirements of crew-served, vehicle-mounted weapon systems. The BAX range would also support dismounted infantry platoon tactical live-fire operations, either independently of or simultaneous with supporting vehicles. Units would acquire skills needed to detect, identify, engage, and defeat stationary and moving targets in a tactical array. Primary features of the BAX include course roads with crossover capability, stationary armor targets, moving armor targets, stationary infantry targets, moving infantry targets, machine gun bunkers, and breaching obstacles. All targets would be fully automated and the event-specific target scenario would be computer-driven and scored from the control facility. The range operating system would be fully capable of providing instrumented after-action reviews. In addition to the range, the BAX would include an after-action review facility, ammunition breakdown building, ammunition loading dock, operations/storage building, arctic latrines, bleacher enclosure, bivouac and unit staging area, covered mess area, building information systems, electric service, water and septic system, storm drainage, and general site improvements.

There were three alternatives being considered for the siting of these projects from 2002 to 2006: Texas Range, Eddy Drop Zone, and Donnelly Drop Zone (Figure 2). On March 17, 2006 USARAK released the BAX/CACTF Supplemental Draft EIS listing Eddy Drop Zone as its preferred alternative.

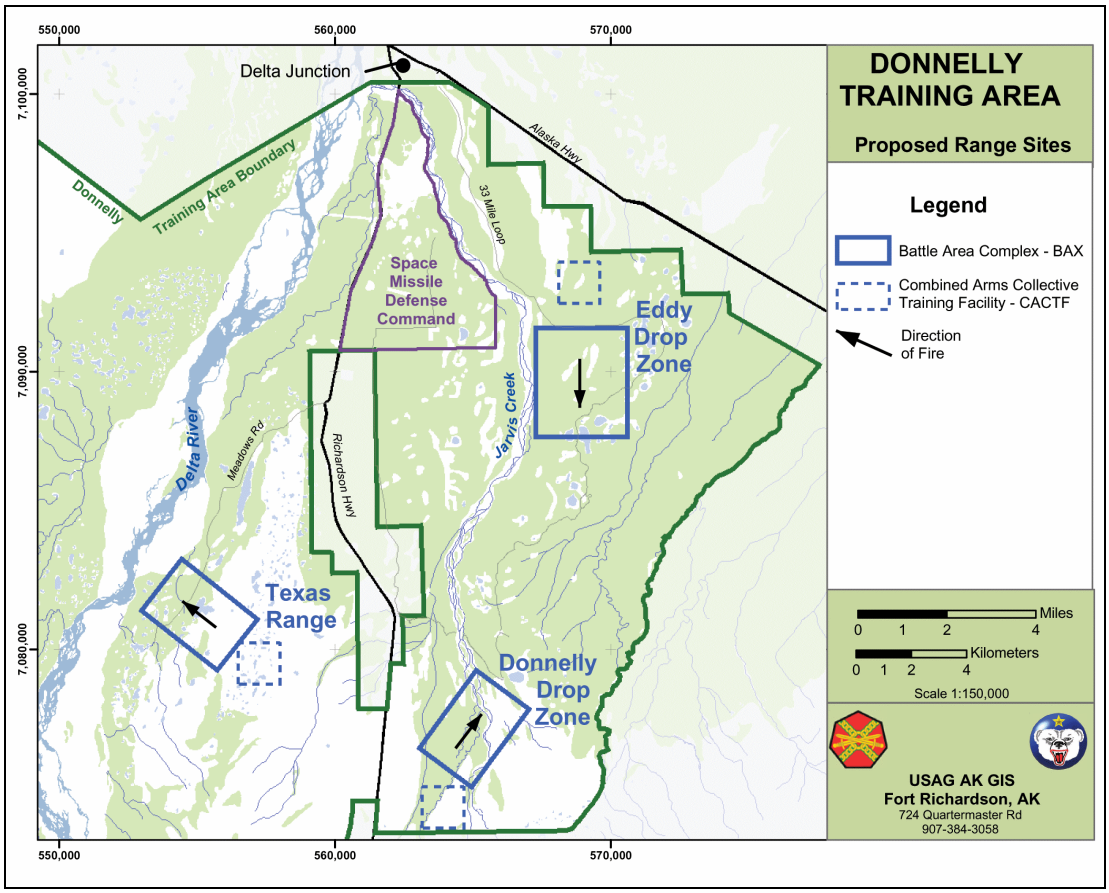

Figure 6. Location of the three BAX alternatives

5.1.1 History Work for BAX Project

Survey for the construction footprints of the three BAX alternatives was conducted in 2002 and 2003 (Hedman et al. 2003; Robertson et al. 2004). The focus in 2003 was completion of the surveys for the firing fans or "surface danger zones" for the alternatives. The firing fan for the Texas Range alternative is located in an active impact area and was not surveyed due to safety concerns. The firing fans for the Eddy Drop Zone alternative (firing south) and Donnelly Drop Zone alternative (firing north) overlap and this area received the majority of the resources for survey in 2003 (Robertson et al. 2004). The focus of the 2004 field season was to start the site evaluations and determinations of eligibility (DOEs) for listing in the NRHP for sites located in the construction footprint and firing fans for the three alternatives of the BAX project (Raymond-Yakoubian and Robertson 2005). The focus of the 2005 field season was to continue the site evaluations and DOEs for listing in the NRHP for sites located in the construction footprint and firing fans for the three alternatives of this project (Robertson et al. 2006). In March 2006 Eddy Drop Zone was named the preferred alternative and USAG-AK and the Alaska State Historic Preservation Officer (SHPO) entered in to consultation. A Memorandum of Agreement (MOA) between USAG-AK and the SHPO signed on July 12 2006 outlining the steps that USAG-AK will take to mitigate the adverse effects that the BAX project will have of site XMH-00874. In July of 2006 archaeological excavation to recover data started.

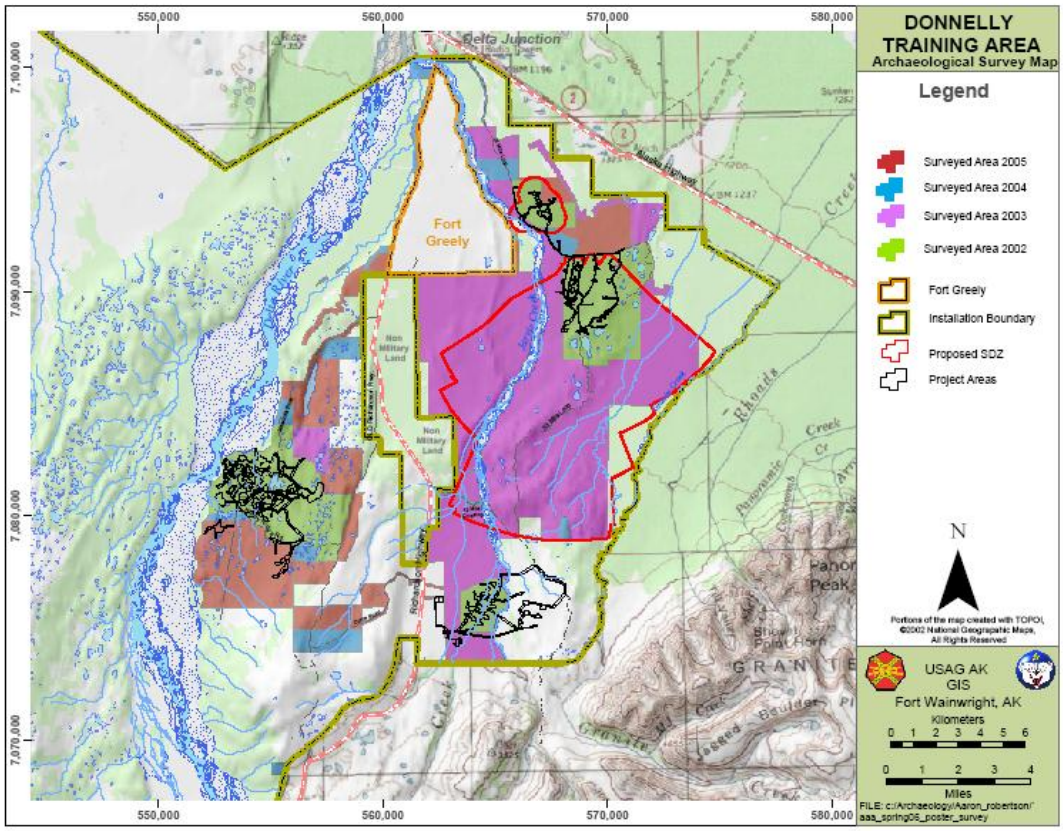

Figure 7. Location of the three BAX alternatives and history of survey for the BAX/CACTF project

5.1.2 BAX Cultural Resources

There are six archaeological sites (XMH-00290, XMH-00873, XMH-00874, XMH-00877 XMH-01160, and XMH-01303) located in the Eddy Drop Zone BAX range alternative footprint. Only sites XMH-00874 and XMH-1303 have been found eligible for listing in the NRHP. Description of site XMH-01303 can be found in this report section 6.0. Site XMH-00874 is described below:

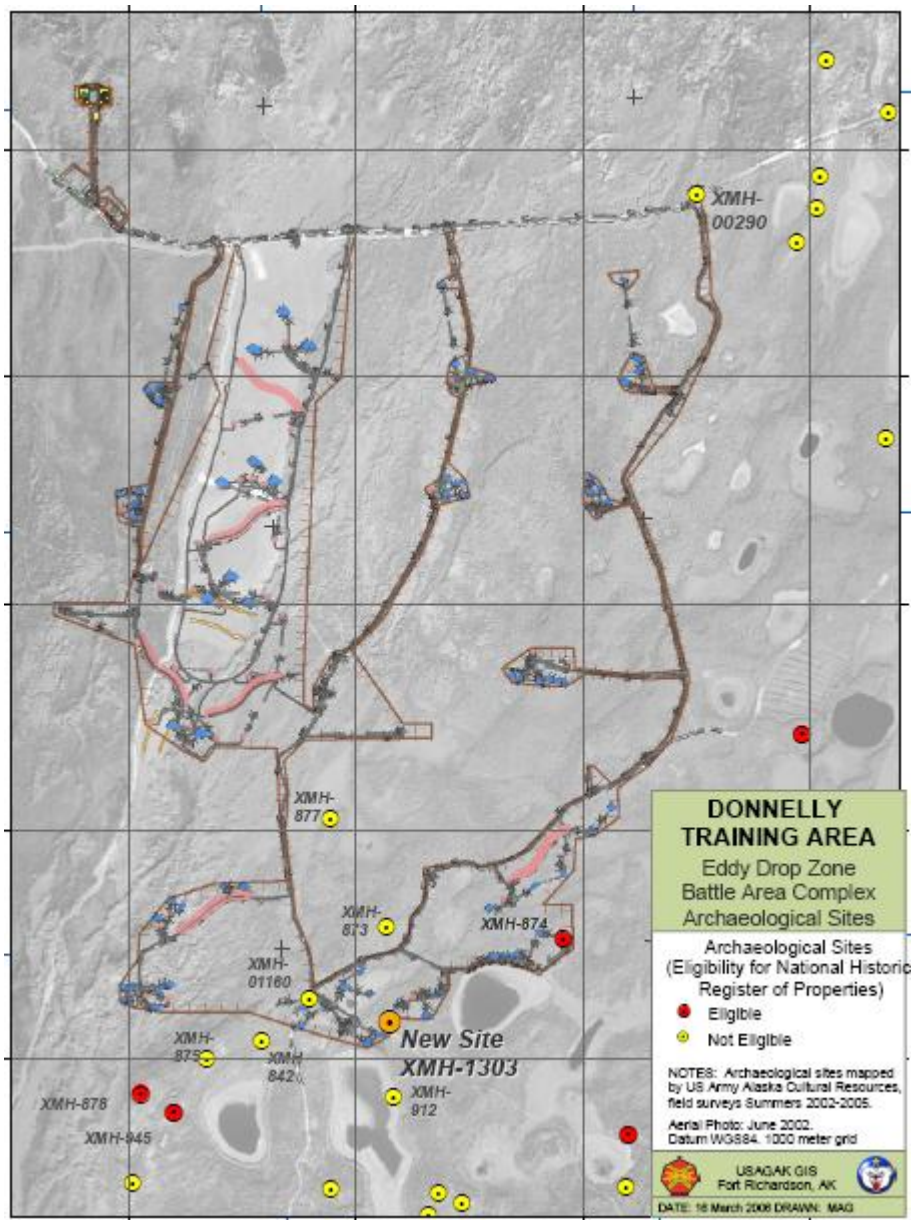

Figure 8. Approximate locations of site XMH-00874 and XMH-01303 in BAX

XMH-00874
Latitude
Longitude:
Determination: Eligible

Site XMH-00874 is located on a high point on a southwest-northeast trending glacial moraine. The closest water source is Banjo Lake, 200m to the southwest. Small spruce and aspen are present, but vegetation consists mainly of small shrubs, moss, and lichen. A small portion of the surface is exposed immediately south of the crest. Overall, surface visibility is minimal throughout most of the site area.

Site XMH-00874 was identified in a 2002 Phase I survey when 10 flakes and one chert biface were found on the ground surface (Hedman et al. 2003). During the Phase II evaluation later that summer, an intensive examination revealed an additional 11 surface artifacts. Two hundred and fifty-nine were recovered from below the surface in either shovel test pits or excavation units. These artifacts include eight tool fragments: one projectile point (Figure 10j), one projectile point fragment (Figure 10g), one biface fragment, one microblade core rejuvenation flake (Figure 10f), and four microblades (Figure 10a-d).

Phase III archaeological excavation to recover data began at the site in July 2006. Almost all of the small spruce trees on the area of the site were removed to aid in excavation and mapping. All live aspen trees were left in place. A Sokkia Set6 Total Station was used to lay out a 10m grid over the site and to put in the corners of the excavation units. The Total Station was also used to three point provenience artifacts, bone, and charcoal.

Forty square meters (37 1m x 1m units and 12 50cm x 50cm units) were excavated during the 2006 field season (Figure 11). Three $6m^2$ areas were opened at each corner of the site and a trench (A), which runs on a north/south axis through the site, was started (Figure 12). This trench will be finished during the 2007 field season; additionally a second trench, running on an east/ west axis through the site, will be excavated in 2007.

A total of 1,845 pieces of cultural material were found: 822 lithic artifacts and 1,000+ bone fragments. These lithic artifacts include 53 tools and diagnostics: seven unifaces (Figure 10q-u), one projectile point fragment (Figure 10k), seven bifaces (Figure 10i and p) and biface reworking fragments (Figure 10h), one microblade core tab (Figure 10e) and 24 microblades. See Table 3 for more details. The remaining finds are lithic debitage, predominantly of rhyolite (Figure 10j), basalt (Figure 10i), and chert (Figure 10o). Material types also include obsidian (Figure 10n) and jasper (Figure 10m), which are non-locally occurring material types.

The 1000+ bone fragments were recovered from one excavation unit, N531/E520 (see Figure 13), and almost all of them from the southeast quad of this unit. More units adjacent to N531/E520 will be excavated during the 2007 field season. The final report will be released within 12 months after the final field season ends.

Figure 9. Restricted Figure. Removed for public use of document**.**

Figure 10. Artifacts from XMH-00874

Table 3. Lithic assemblage recorded from XMH-00874 in 2006

Artifact Class	Frequency	% of Assemblage
Bifaces (1%)		
Projectile point fragments	1	<1%
Biface fragments	5	<1%
Bifacial reworking flakes	2	<1%
Unifaces (1%)		
Side scraper	1	<1%
End scraper	3	<1%
Uniface fragment	2	<1%
Unifacially retouched blade	1	<1%
Microblade Cores and Microblades (3%)		
Microblade core tab	1	<1%
Microblades	24	3%
Blade Cores and Blades		
Blades	2	<1%
Burin		
Burin Spall	1	<1%
Hammerstone	1	<1%
Tci thos	5	<1%
Manuport	3	<1%
Debitage (95%)		
Flakes	755	93%
Shatter	14	2%
Total	**822**	**100%**

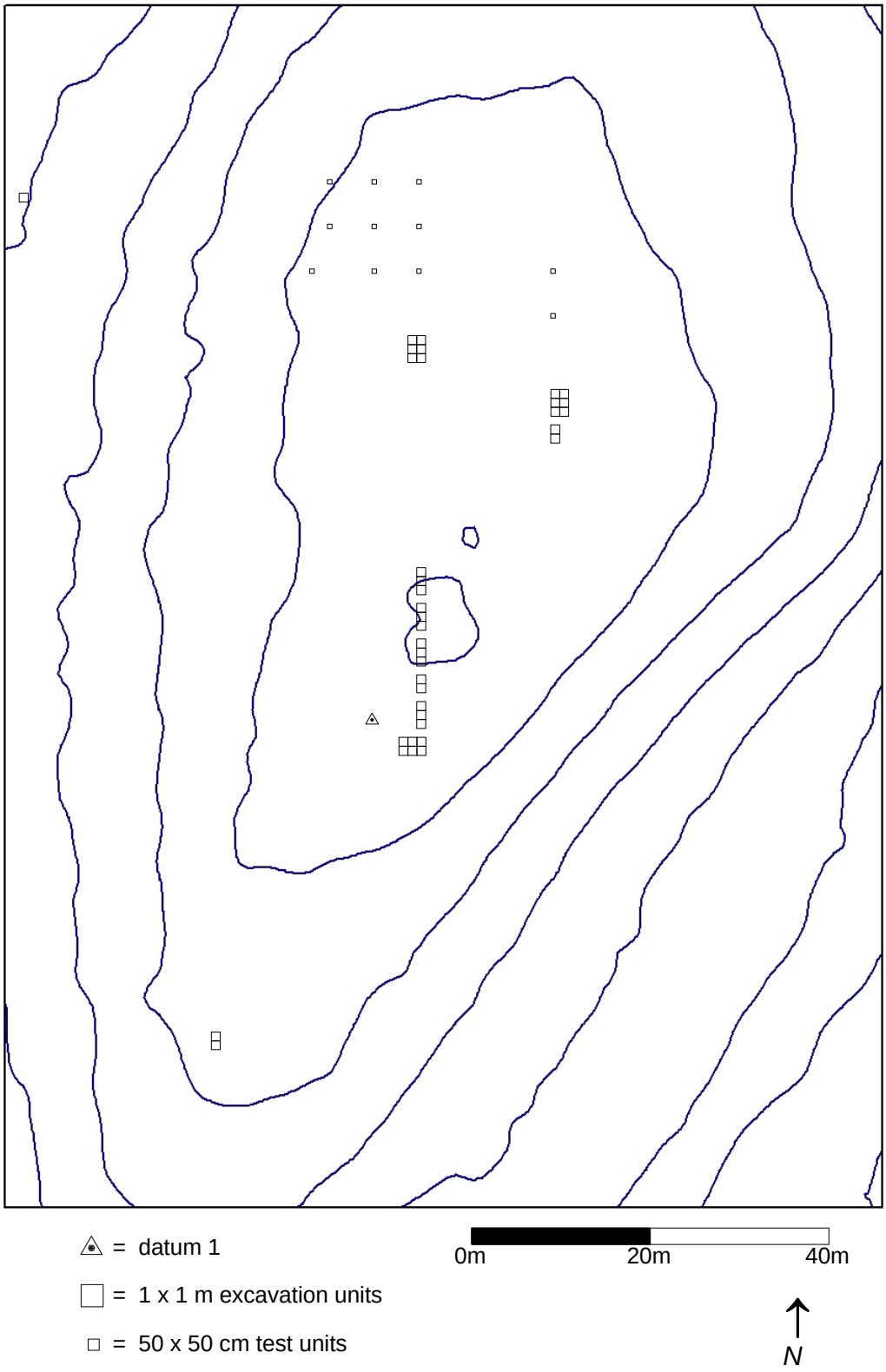

Figure 11. Map of 2006 Excavation at XMH-00874

Figure 12. Site XMH-00874 Trench A in 2006, facing north

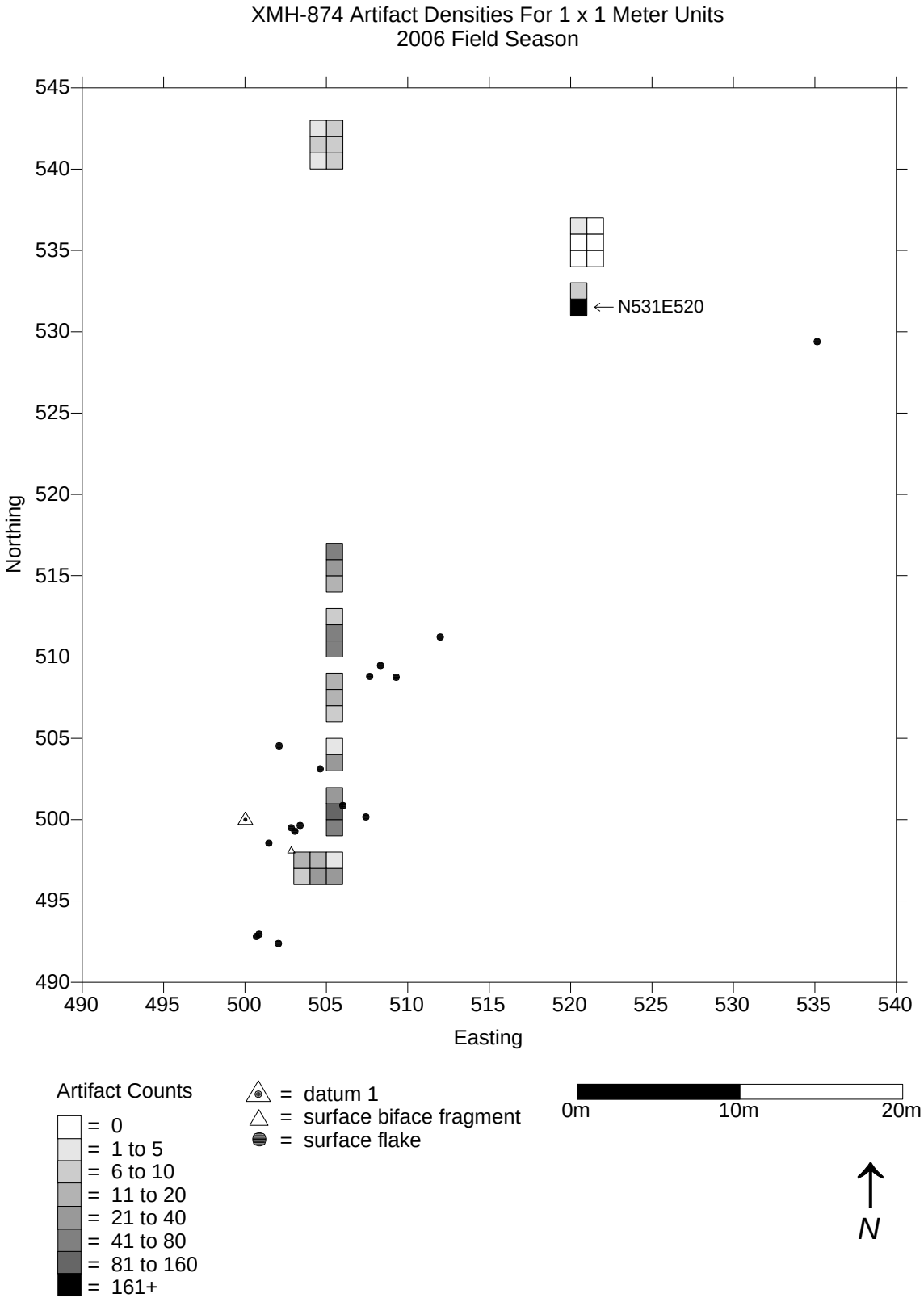

Figure 13. Artifact densities for excavation units at XMH-00874

5.2 Wills Range Complex Maintenance

USAG-AK has proposed range upgrades and maintenance at Wills Range Complex located approximately ten kilometers south of Delta Junction and less than one kilometer west of the Richardson Highway at Ft. Wainwright's DTA (Figures 14 and 15). Wills Range Complex includes several smaller ranges: Alabama Range, Arkansas Range, California Range, Colorado Range, and Georgia Range.

The project involves the construction of new target pits, berms, and access controls, the removal of encroaching vegetation, and the performance of regular maintenance on gravel roads in the Range Complex. Construction is scheduled for October 2006 and December 2007.

5.2.1 Wills Range Complex Maintenance Section 106 (NHPA) Inventory

The entire length of the Wills Range Complex was archaeologically surveyed at various times throughout the 2004 and 2006 field seasons (Figure 3). This work was completed by crews of archaeologists employed by the CEMML. CEMML Archaeologist Aaron Robertson was the supervising archaeologist for this inventory.

5.2.2 Wills Range Complex Maintenance Cultural Resources

Three prehistoric sites have been previously recorded within 500 meters of the proposed project area (Figures 2 and 3). These sites (XMH-00253, XMH-00287 and XMH-00288) are located on a glacial outwash terrace that overlooks the Delta River. All of the project areas are located in the flood plane 100 meters below the terrace in an area that has not yet produced any cultural material (Bacon and Holmes 1979; Goodman et al. 2002; Higgs et al. 1999; Holmes 1979; Robertson et al. 2004; Robertson et al. 2006). Following is a description of each recorded site near the currently proposed project area:

XMH-00253

Site XMH-00253 is located on a glacial outwash terrace that overlooks the Delta River next to an open gravel pit, approximately 150m west of the Richardson Highway. The site was identified in 1976 and investigated in 1977. The site consisted of numerous flakes, scrapers, microblade cores, microblades, rejuvenation flakes, a core tablet, a burin, and burin spalls (Rabich and Reger 1978). This site was revisited in 2003 and no new artifacts were located.

XMH-00287

Site XMH-00278 is located on a glacial outwash terrace that overlooks the Delta River, approximately 600m west of the Richardson Highway. The site was identified in a 1979 survey and consists of a retouched flake and several flakes of different material types on the surface (Holmes 1979). Holmes (1979:86) notes that "[t]he area has been heavily disturbed by roads, power lines, gravel pits and clearing." This site was revisited in 2004 for this project, and no new artifacts were located. The location on the AHRS card is off by several hundred meters.

XMH-00288

Site XMH-00288 is located on a glacial outwash terrace that overlooks the Delta River on the eastern side. The site was identified in the 1979 survey and consists of two chert flakes found on the surface (Holmes 1979). Two test pits excavated during the 1979 survey were sterile (Holmes 1979).

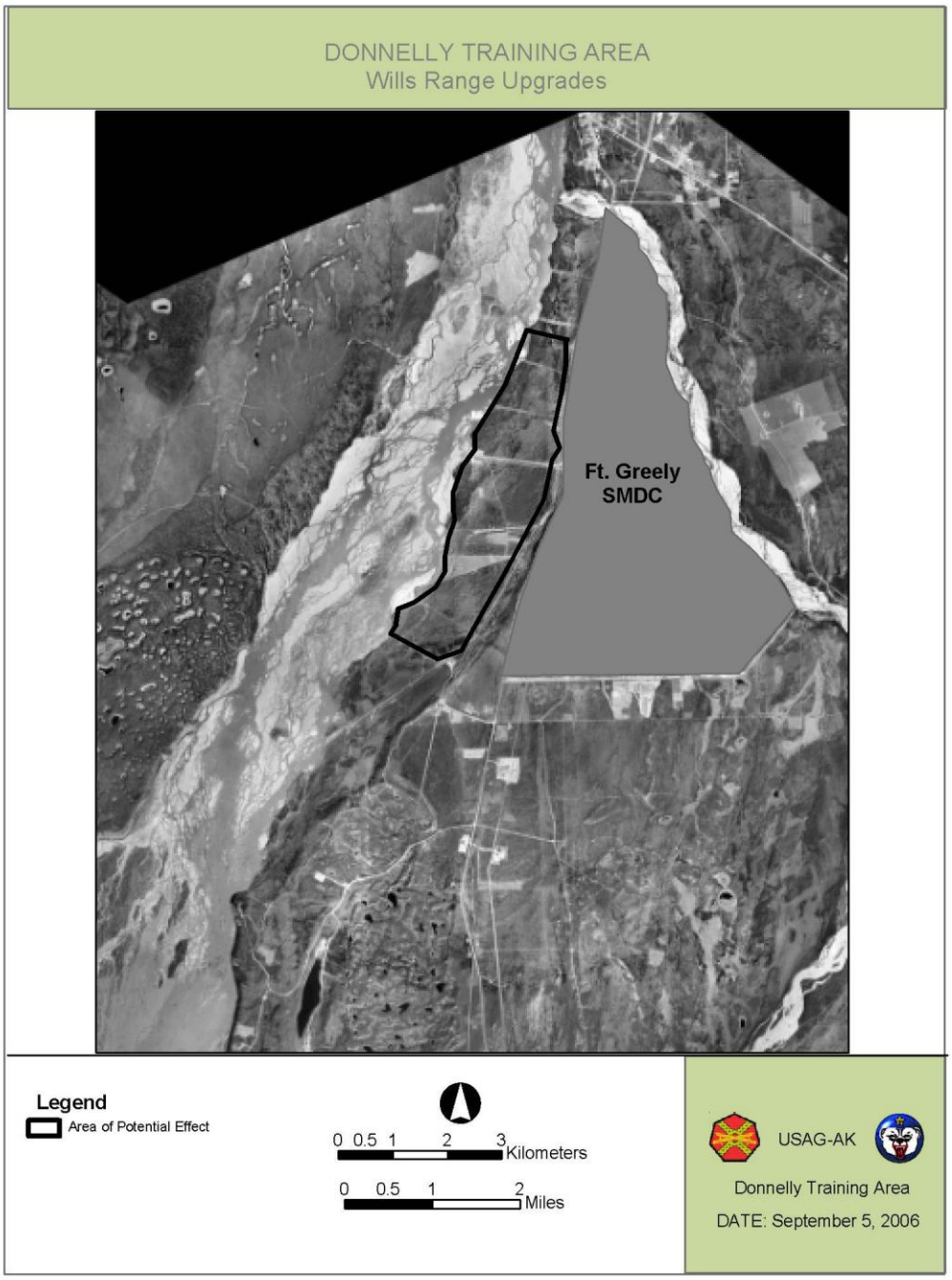

Figure 14. Map showing the location of Wills Range Complex APE

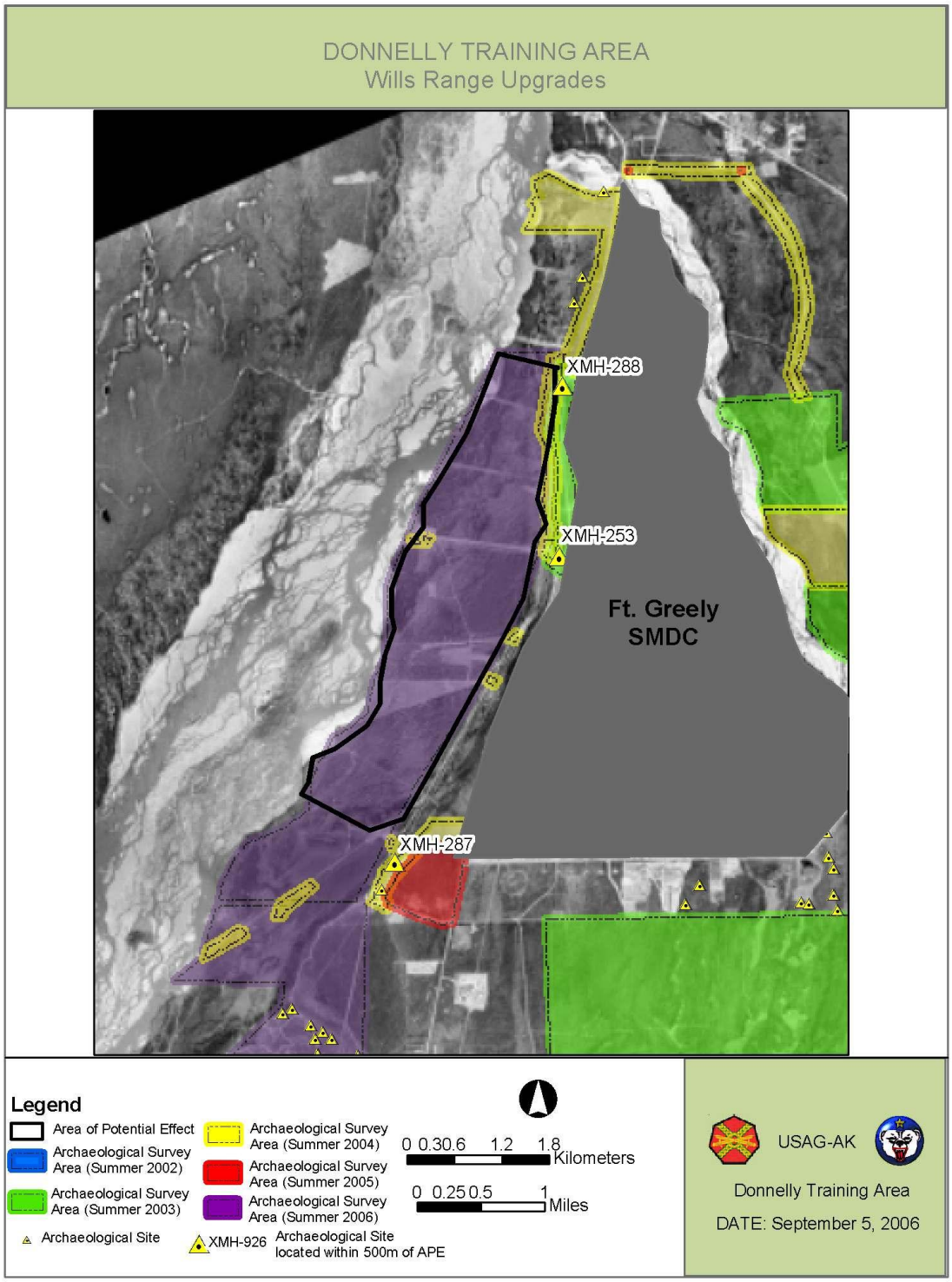

Figure 15. Map showing Wills Range Complex APE and surveyed areas

5.3 Donnelly Drop Zone Improvement Project

USAG-AK has proposed to conduct an improvements project to Donnelly DZ. Improvements will consist of cleaning up the drop hazards in Donnelly DZ. This will address safety issues and will include removal of posts and telephone poles (in coordination with FGA DPW), fences, and scattered trees. All objects will either be completely removed or stumps will be taken down as near to the ground level as possible. Ground disturbance will take place only at discrete locations where a ground object needs to be removed.

5.3.1 Donnelly Drop Zone Improvement Project Section 106 (NHPA) Inventory

During June of 2006 the USAG-AK DTA Archaeologist reviewed the project. In the summers of 2002, 2003, and 2006, two archaeological survey crews, each comprised of four archaeologists employed by the CEMML, conducted a pedestrian survey of the proposed project area at Ft. Wainwright's DTA.

The project's APE encompassed an area larger than the anticipated construction footprint in order to ensure coverage of areas that may incur secondary impacts during construction or use. Parallel pedestrian transects spaced at approximate 20 meter intervals were walked systematically across the APE and surrounding area (Figure 16). No cultural material was observed inside the APE.

5.3.2 Donnelly Drop Zone Improvement Project Cultural Resources

Three sites (two prehistoric and one historic) have been previously recorded within 1.5 kilometers of the proposed project area (Figure 16). The closest site (XMH-01274) is located to the east of the proposed project area. This site was recorded during a 2005 Phase I survey (Price 2006). Two more sites (XMH-01072 and XMH-01073) are located farther to the east of the proposed project area. Following is a description of each recorded site near the currently proposed project area:

XMH-01072

Site XMH-01072 is located on a long north-south trending bluff. Jarvis Creek is the nearest water source, located 500m to the east. The view shed is excellent at 270º with Donnelly Dome and the Alaska Range in the southwest and the Granite Mountains stretching from the south to the east. The view north is blocked by vegetation. Surface visibility is approximately five percent

Site XMH-01072 consists of one tertiary chert flake found during a 2003 Phase I survey (Robertson et al. 2004). No artifacts were collected in 2003. Site XMH-01072 was evaluated during the 2005 field season and was determined not eligible for listing in the NRHP (Robertson et al. 2006).

XMH-01073

Site XMH-01073 is located on a long north-south trending bluff about 500m from Jarvis Creek, which is the nearest water source. The view shed is a full 360º with Donnelly Dome to the southwest and the Granite Mountains to the southeast. Surface visibility is approximately five percent

Site XMH-01073 consists of three artifacts found during a 2003 Phase I survey (Robertson et al. 2004). A gray chert microblade, a brown secondary flake of unknown material, and a banded gray tertiary chert flake were discovered on the surface of the site. The microblade was collected in 2003. Site XMH-01073 was evaluated during the 2005 field season and was determined not eligible for listing in the NRHP (Robertson et al. 2006).

XMH-01274

Site XMH-01274 is a historic Cold War Missile Defense Alarm System (MIDAS) site. MIDAS was the first satellite system designed to warn U.S. commanders of hostile missile launches. The Donnelly Flats tracking station was active at various times between 1961 and 1967, supporting MIDAS and Program 461. It was located on a flat valley floor on the southern portion of Fort Greely with personnel housing and some support functions provided twelve miles north on Fort Greely's cantonment. Today, the remnants of this station are on training lands managed by the U.S. Army Garrison Alaska (USAG-AK). For more information on Donnelly Flats MIDAS site see the attached document (Price 2006).

Figure 16. Restricted Figure. Removed for public use of document**.**

5.4 Lower 33-Mile Loop Rd Gravel Sources

USAG-AK has proposed to make improvements to the lower third of 33-Mile Loop Rd that will allow for travel during wet times of the year. Several mud holes along the existing trail have been detailed for repair. Gravel is needed for this project. The quality and quantity of gravel from sources that were previously used for other sections of 33-Mile Loop Rd is inadequate. 33-Mile Loop Rd is barely more than a trail and is not meant for multiple daily passes with belly dumps full of gravel. This will cause excess wear and tear on the portions that have already been improved. The current site that has been chosen is within the next portion of improvements. It will be developed as needed. One end will be opened and gravel will be removed load by load rather than clearing and working the entire area at the beginning. This source will provide gravel for future projects in a large radius all around this point. Any new access projects to open additional training lands in Training Areas 7 and 10 will be able to use this gravel pit.

5.4.1 Lower 33-Mile Loop Rd Gravel Sources Section 106 (NHPA) Inventory

During the spring of 2006 the USAG-AK DTA Archaeologist reviewed the project. In the summer of 2003, archaeological survey crews, each comprised of four archaeologists employed by the CEMML, conducted a pedestrian survey of the proposed project area at Ft. Wainwright's DTA. The project's APE encompassed an area larger than the anticipated construction footprint in order to ensure coverage of areas that may incur secondary impacts during construction or use. Parallel pedestrian transects spaced at approximate 20 meter intervals were walked systematically across the APE and surrounding area (see figures 3). No cultural material was observed inside the APE.

5.4.2 Lower 33-Mile Loop Rd Gravel Sources Cultural Resources

Eleven prehistoric sites have been previously recorded within 1 kilometer of the proposed project area (Figure 18). The closest site (XMH-00883) is located 10m to the south of the proposed project area. This site was recorded during a 2002 Phase I survey and was determined not eligible for listing in the NRHP that same year (Hedman et al. 2003). There are four other sites located to the south of the proposed project area: XMH-00284, XMH-01094, XMH-00881, and XMH-01096. Site XMH-00284 was located during a 1978 survey (Holmes 1979), and XMH-00881 was located during a 2002 Phase I survey (Hedman et al. 2003). Both sites were evaluated in 2002, and both were determined eligible for the NRHP (Hedman et al. 2003). Sites XMH-01094 and XMH-01096 were located during a 2003 Phase I survey. XMH-01094 was determined eligible for the NRHP that same year, and XMH-01096 has not yet been evaluated.

To the east of the proposed project area, four sites were recorded during Phase I surveys in 2002 (XMH-00884 and XMH-00888) and in 2003 (XMH-01090 and XMH-01091) (Hedman et al. 2003; Robertson et al. 2004). Sites XMH-00884 and XMH-00888 were evaluated in 2002 and determined not eligible for the NRHP (Hedman et al. 2003). Sites XMH-01090 and XMH-01091 have not yet been evaluated.

There is one site each to the west and north of the proposed project area: XMH-01093 and XMH-01101, respectively. Both sites were located during Phase I survey in 2003, and they were evaluated that same year. XMH-01093 was determined eligible for the NRHP, and XMH-01101 was determined not eligible for inclusion in the NRHP. Following is a description of each recorded site near the currently proposed project area:

XMH-00284

XMH-00284 is located on a moraine that is part of a larger ridge system that is nearly 2km long and 250m wide. The slope is steep on all sides. The surrounding terrain is generally flat. The ridge extends southwest and is the most marked topography in the immediate area. View shed at the site is 180° with unobstructed views to the east and south.

A total of 26 fragments of flaked stone were found at the site: 25 on the surface and one in a shovel test. Artifacts observed on the ground surface included 12 fragments of dark gray/black chert, 10 of gray chert, and three of gray-banded chert. All of these may be the same local raw material, which is generally referred to as gray chert. Two of these artifacts (one dark gray chert microblade and one large (5 x 4cm) black chert flake) were found on the road surface. A single light gray chert flake was recovered from the positive shovel test. XMH-00284 was evaluated during the 2002 field season and was determined eligible for listing in the NRHP (Hedman et al. 2003).

XMH-00881

The site is located on a moraine that is part of a larger ridge system nearly 2km long and 250m wide. The slope is steep on all sides at a grade of 15-20 percent. The surrounding terrain is generally flat. The ridge extends southwest and is the most marked topography in the immediate area. View shed at the site is 180° with unobstructed views to the east and south. The site was evaluated during the 2002 field season and was determined eligible for listing in the NRHP (Hedman et al. 2003).

XMH-00883
Site XMH-00883 is located on a moraine that is part of a larger ridge system that is nearly 2km long and 250m wide. The slope is steep on all sides at a grade of 15-20 percent. The surrounding terrain is generally flat. The ridge extends southwest and is the most marked topography in the immediate area. View shed at the site is 180° with unobstructed views to the east and south. Initial investigation of the site revealed three fragments of flaked stone on the ground surface.

The site is limited to a small surface flake scatter with a total of three fragments of flaked stone located on the surface of the site, all of which can be classified as gray chert (two dark gray and one light gray fragment). The site was evaluated during the 2002 field season and was determined not eligible for listing in the NRHP (Hedman et al. 2003).

XMH-00884
The site is located on a moraine that is part of the same larger ridge system that the previously discussed sites are located on. The slope is steep on all sides at a grade of 15-20 percent. The surrounding terrain is generally flat. The ridge extends southwest and is the most marked topography in the immediate area. The view shed at the site is 180° with unobstructed views to the east and south. Site XMH-00884 consists of only one artifact: a light gray chert flake found in the initial survey shovel test. Site XMH-00884 was located and evaluated during the 2002 field season and was determined not eligible for listing in the NRHP (Hedman et al. 2003).

XMH-00888
The site is located on the low, northern end of a large moraine that is nearly 2km long and approximately 250m wide. The slope is gradual on all sides. The surrounding terrain is generally flat and the site location provides an unobstructed view to the east. The site was discovered during survey of the moraine when investigators found one chert flake in a shovel test.

The only artifact recovered at the site is a single chert flake, recovered in the initial shovel test investigations. Despite extensive sub-surface investigations, no further cultural material was identified, and the single chert flake appears to be an isolated find. Site XMH-00888 was evaluated during the 2002 field season and was determined not eligible for listing in the NRHP (Hedman et al. 2003).

XMH-01090
Site XMH-01090 is located on the top of a high point on a northeast/southwest trending ridge. The site is elevated 10m above the surrounding terrain. Numerous other hills are present to the southwest and northeast of the site with large expanses of muskeg to the east and south. The site affords a 180° unobstructed view of the surrounding terrain to the south and east. No water sources are visible from the site, but a small unnamed lake is located approximately 500m to the west/northwest. There is approximately 50 percent surface visibility with vegetation consisting of low scrub, moss, lichen, and forbs. Site XMH-01090 consists of a small gray chert flake found in a shovel test pit. A total of three shovel tests were excavated to glacial till, but only one produced cultural material. The site has not been evaluated for listing in the NRHP.

XMH-01091
Site XMH-01091 is located on top of a high point on a northeast/southwest trending ridge. The site is elevated 10m above the surrounding terrain to the south and gradually descends in all other directions. Numerous other hills are present to both the southwest and northeast of the site with large expanses of muskeg to the east and south. The site has an approximately 180° unobstructed view of the surrounding terrain to the south and east. No water sources are visible in the immediate area, but a small unnamed lake is located approximately 500m to the northwest. Due to wind erosion and recent episodes of forest fire, a moderate amount of surface visibility was observed at the site. The surface of the site is vegetated primarily by low scrub, moss, lichen and forbs. Site XMH-01091 consists of four gray chert tertiary flakes found on the surface, all of which appear to be of the same material. Preliminary flake type analysis indicates later stages of lithic reduction occurred at the site. No primary or secondary flakes were located. Subsurface examinations have yet to be conducted. No artifacts were collected and no density plots were calculated. The site has not been evaluated for listing in the NRHP.

XMH-01093
Site XMH-01093 is located on a small, narrow north-south trending ridge. The site has a 360° unobstructed view of the surrounding terrain. The Alaska Range is visible to the southwest, and Donnelly Dome is visible to the south, but the Granite Mountains are obstructed by a prominent ridge to the east. The nearest water source is a small, unnamed lake located 1km to the northeast. The ground surface of the site is vegetated primarily by low scrub, moss, and lichen with surface visibility estimated at 10 percent.

Site XMH-01093 consists entirely of lithic debitage. Three flakes were located subsurface in either shovel tests or test units including one flake found in the Phase I survey. No tools were found at the site. Chert and basalt were the only material types present among the flakes. Site XMH-01093 was evaluated during the 2003 field season and was determined eligible for listing in the NRHP (Robertson et al. 2004).

XMH-01094
Site XMH-01094 is located on a northeast-southwest trending ridge with 33 Mile Loop Trail running through the middle of it. Donnelly Dome is visible to the southwest, and the Granite Mountains can be seen to the east. The nearest water source is North Caribou Lake located approximately 1.5km to the southwest. The ground surface of the site is vegetated primarily by low scrub, forbs, grasses, and sedges with several barren areas scattered around. Surface visibility is approximately 75 percent as a result of 33 Mile Loop Trail running the length of the ridge.

Site XMH-01094 consists entirely of one uniface that has been broken into two separate pieces, both found on the surface of 33 Mile Loop Trail. One fragment was found during Phase I survey and the other fragment was found during the evaluation phase in essentially the same spot in the road. Both pieces were collected. The refitted black chert uniface is 81mm long, 40mm wide, and the combined weight of the two pieces is 22g. Site XMH-01094 was evaluated during the 2003 field season and was determined not eligible for listing in the NRHP (Robertson et al. 2004).

XMH-01096

Site XMH-01096 is located on top of a small isolated hill. The hilltop is approximately 25m in diameter and is elevated 10-15m above the surrounding terrain. A 2km or longer southeast/northwest trending ridge can be seen to the southeast. The site has a 360° unobstructed view of the surrounding terrain and has good views of the Granite Mountains. No lakes are visible in the immediate area, but several lakes are located approximately 1km to the southwest. Due to wind erosion and recent episodes of forest fires, the site has a high percentage of surface visibility. Site XMH-01096 consists of three pieces of lithic debitage identified on the ground surface. These pieces include one piece of tan chert shatter, one piece of gray chert shatter and one black basalt tertiary flake. All artifacts were found on the southeast slope of the hill within a 15m diameter area. Subsurface excavations have yet to be conducted The site has not been evaluated for listing in the NRHP.

XMH-01101

Site XMH-01101 is located on a high point of an east-west trending knoll. The site has a 360° unobstructed view of the surrounding area and overlooks an unnamed lake approximately 50m to the southwest. The site has a high amount of surface visibility. The surrounding area is composed of mixed forest with low scrub, moss, lichen, and tussock fields. Site XMH-01101 consists entirely of lithic debitage. Nineteen flakes were found on the surface. No tools or subsurface artifacts were located at the site. Chert, basalt, and rhyolite were present among the debitage. Site XMH-01101 was evaluated during the 2003 field season and was determined not eligible for listing in the NRHP (Robertson et al. 2004).

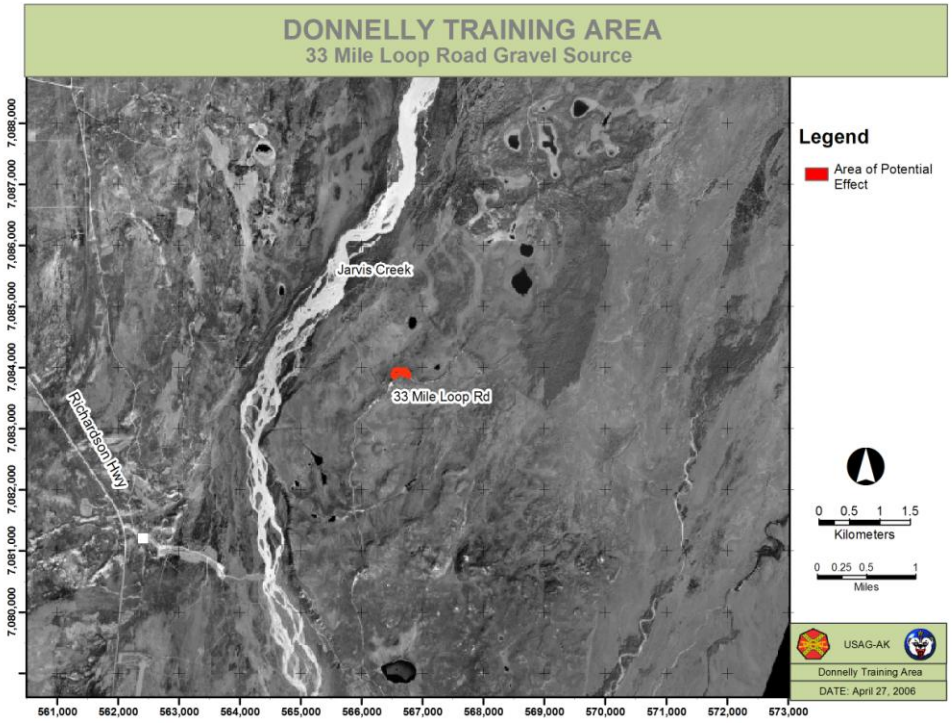

Figure 17. Location of the project's APE on the DTA

Figure 18. Restricted Figure. Removed for public use of document**.**

5.5 Dome Road and Old Richardson Highway Maintenance

USAG-AK has proposed to install signage and access controls and to perform regular maintenance on several gravel roads throughout the DTA. These maintenance and installation activities are proposed to take place on Dome Road and Old Richardson Highway (Figure 2). Numerous training areas in DTA are accessed by these two gravel roads and regular maintenance is required on these roads to keep these training areas accessible. Additionally, with increased training and greater testing loads, added measures such as signs, flag poles, and ditching are also required periodically.

Dome Road and Old Richardson Highway make a loop with the Richardson Highway that allows access to many range facilities. These are key roads that must be graded periodically throughout the summer. These roads are also cleared of snow during winter. Potholes frequently develop and will be repaired as needed. Side ditches running along both sides of these roads and used for drainage must also be maintained. Standard road and informational signs will be installed on posts driven into the ground just outside the side ditches as needed. Warning flag poles that indicate when a range is in use may also be installed just outside the side ditches and are usually set in concrete. It may also be necessary to install additional swinging pipe gates on side trails, typically within 50 feet of the main road. The uprights are set in concrete and usually tie into the forest on either side with a short section of pipe rail fencing.

USAG-AK is proposing to conduct regular road maintenance activities such as grading, pothole and side ditch repair, and snow plowing along the Dome Road and Old Richardson Highway loop (Figures 3). USAG-AK is also proposing to install occasionally, as needed, additional signage and access control gates along this loop of roads. All work will be confined to within 50 feet of the existing road footprint and will take place between October 2006 and December 2007.

5.5.1 Dome Road and Old Richardson Highway Section 106 (NHPA) Inventory

The entire length of the Dome Road and Old Richardson Highway loop has been archaeologically surveyed at various times throughout the 2002, 2004, 2005, and 2006 field seasons (Figure 2). At least 80m on both sides of each of these roads has been inventoried for historic properties and for most of the loop much more than 80m on either side has been investigated. This work was completed by crews of archaeologists employed by the CEMML. CEMML archaeologists, Bill Hedman (2002) and Aaron Robertson (2004, 2005 and 2006), were the supervising archaeologists for these inventories.

5.5.2 Dome Road and Old Richardson Highway Cultural Resources

There are eight known archaeological sites located in close proximity to the proposed project areas. No sites are located within the APE. Sites XMH-00955, XMH-00969, XMH-00979, XMH-01198, XMH-01201, XMH-01271, XMH-01291, and XMH-01292 are near, but outside of the APEs for the Dome Road and Old Richardson Highway projects. None of these eight sites will be affected by the proposed maintenance activities or sign and access controls installation. Therefore, no historic properties will be affected by the proposed activities.

XMH-00955
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-00955 is located on the crest at the southern end of Windy Ridge. The view shed at the site is almost 360°. The Alaska Range is visible to the southwest, the Delta River to the west, and the tip of Donnelly Dome to the southeast. The nearest water source is a chain of kettle lakes to the west at the base of Windy Ridge. Surface visibility is high due to sparse vegetation.

Site XMH-00955 was identified during pedestrian survey. A total of 12 light gray chert flakes were observed in an exposed area at the southern end of Windy Ridge. A chert scraper was found and collected along a two-track road that follows the crest. Subsurface examinations have yet to be conducted.

XMH-00969
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-00969 is located on the crest of the western edge of Windy Ridge. The ridge is fairly wide and flat and is largely deflated down to a pavement of cobbles and boulders. An army base camp is located 30m to the east.

Site XMH-00969 appears to be an isolated find identified during pedestrian survey. A banded light gray chert biface fragment was observed and collected from the surface. Subsurface examinations have yet to be conducted.

XMH-00979
Latitude:
Longitude:
Determination: Not evaluated

XMH-00979 consists of two basalt flakes recovered in a shovel test. The site is half a kilometer southeast of J Lake and is situated atop a prominent ridge immediately west of the northern end of Nickel Lake.

XMH-01197
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01197 is located on a bench that extends on a gradual uphill slope to the west and a steeper slope off to the east and south. The nearest water source is Dome Lake, located 2km to the south. The Alyeska pipeline is located approximately 400m to the east. The Granite Mountains are visible to the east and Donnelly Dome to the southeast. Vegetation at the site consists of dwarf willow and alder bushes, and there is no surface visibility.

At the site, two shovel tests were excavated at a distance of 20m from each other. The second shovel test yielded two black chert tertiary flakes at a depth of 0.5cm-33cmbs.

XMH-01201
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01201 is located just off the western shoreline of a medium-sized lake to the north of Donnelly Dome. It is located in a slightly depressed basin, but the view shed is still approximately 360°. Donnelly Dome is visible to the south, the Granite Mountains can be seen in the east, and the Alaska Range is visible in the southwest. The closest water source is the lake on whose shore the site sits. This lake is the only water source visible from the site. Surface visibility at the site is estimated to be 50 percent.

Site XMH-01201 was found through visual survey of the landform when a light gray chert biface was observed on the surface. This tool is 9cm long, 4cm wide, and weighs 40g. No density plots were calculated at the site. No shovel test pits were excavated at the site. No artifacts were collected from the site.

XMH-01271
Latitude:
Longitude:
Determination: Not Eligible

Site XMH-01271 is located on a southwest/northeast trending moraine. Donnelly Dome can be seen to the east and the Alaska Range to the south and southwest. The view shed at the site is a full 360°. The Delta River is located to the west, and the Granite Mountains to the east. Surface visibility at the site is 100 percent; the site is situated on windswept barrens devoid of soil deposition.

Site XMH-01271 was identified during the 2005 field season and consists of one artifact. One tertiary chert flake was discovered on the surface during the Phase I survey. The site was evaluated during the 2005 field season and was determined not eligible for listing in the NRHP (Robertson et al. 2006). Pedestrian survey and Phase II evaluation produced only one surface artifact.

XMH-01291
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01291 is located on the eastern edge of an east-west trending moraine. The nearest water source is an unnamed lake 800m to the east. There is also a dry creek bed 300m to the east. All landforms and landmarks of interest are located to the east. Visible landforms include Donnelly Dome located to the east of the site. The most visible landmark is the Alyeska Pipeline 200m to the east. The view shed is 300°. Surface visibility at the site is estimated to be 30 percent.

The site was located through systematic transecting of the area with transects spaced at 20m intervals. The site was located on the surface. Artifacts consist of three basalt flakes, one piece of basalt angular debris, and one chert flake.

Figure 19. General view of XMH-01291, facing northeast

XMH-01292
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01292 is located in an exposed surface area just east of Dome Road. The surface of the site is generally flat. There are no bodies of water within the view shed, but there is a small unnamed lake 1km to the southwest. Visible landmarks include Donnelly Dome, which is located 3km to the south. Surface visibility is estimated to be 30 percent. Landmarks include the pipeline that is located in the west, and the Richardson Highway to the east. The view shed is estimated to be 300°.

The site was located through systematic transecting of the area with transects spaced at 20m intervals. The site was located on the surface. Artifacts consist of one notched projectile point base made of black chert. The artifact was collected. No shovel excavations were done at the site.

Figure 20. Artifact from XMH-01292

Figure 21. General view of XMH-01292, facing north

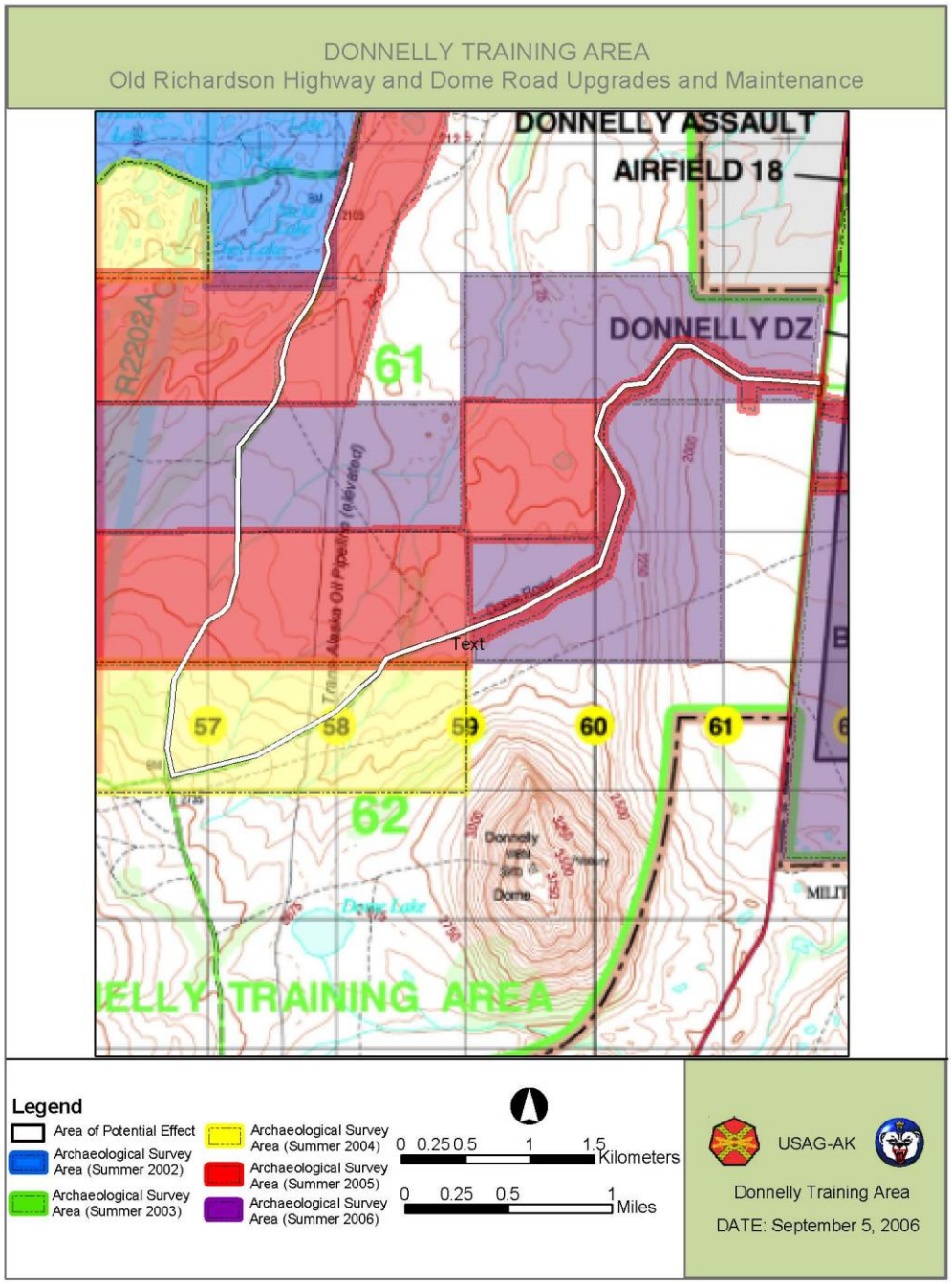

Figure 22. Map showing Dome Road and Old Richardson Highway APE and areas surveyed

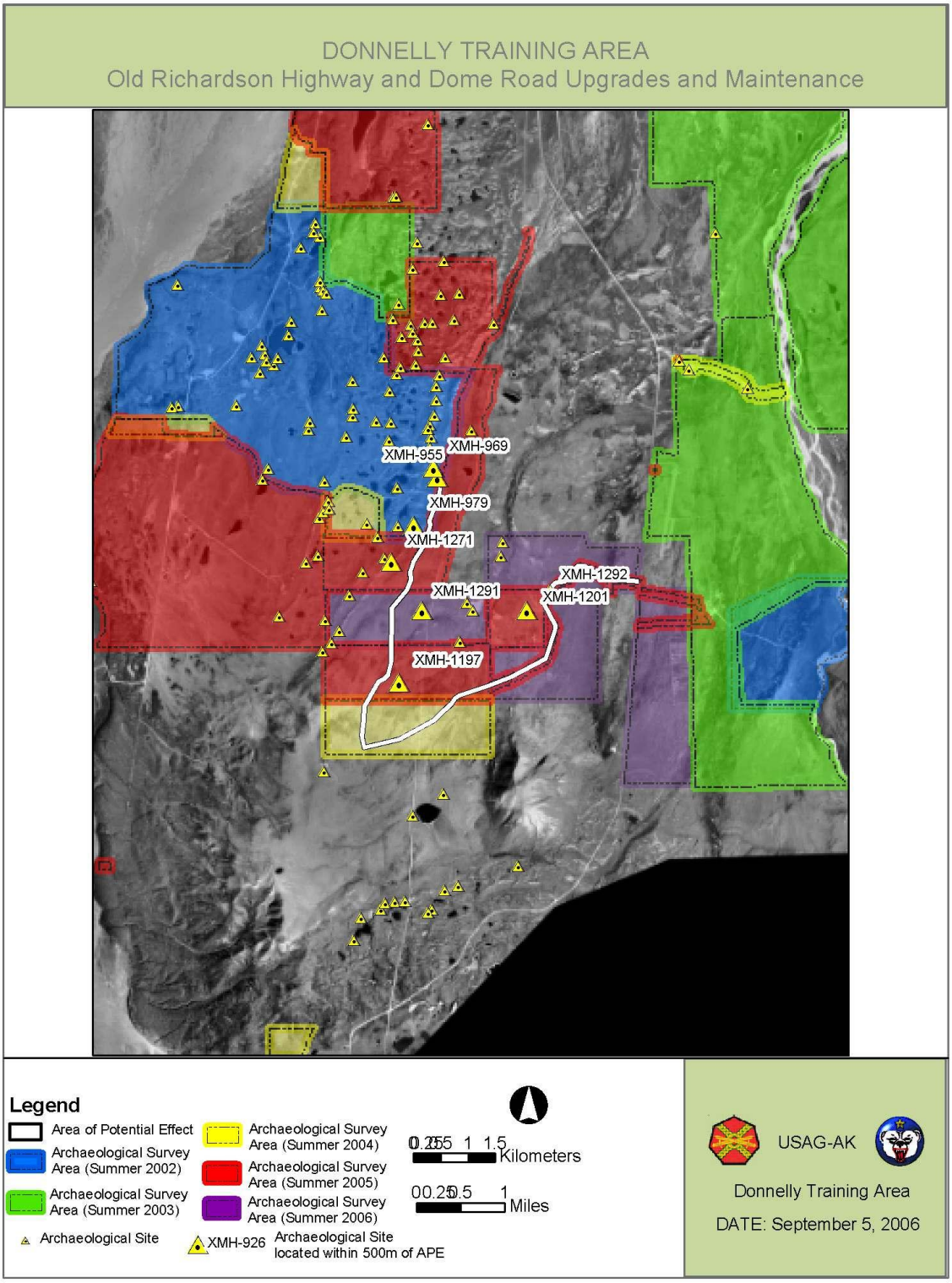

Figure 23. Dome Road and Old Richardson Highway APE and archaeological sites

6.0 Determination of Eligibility for the National Register of Historic Places

Four sites were evaluated for eligibility for the NRHP in 2006, pursuant to 36 CFR 800. The field work for two sites (XMH-00290 and XMH-00895) was completed prior to the 2006 field season and was associated with the BAX project. However, the determinations of eligibility (DOEs) were submitted in 2006. Following is a description of each DOE submitted in 2006:

XMH-00290
Latitude:
Longitude:
Determination: Not Eligible

Site XMH-00290 was originally identified during a 1979 survey. It consisted of a surface lithic scatter with numerous flakes located at an intersection of a road and a trail. The site was surface collected (Holmes 1979). The site was relocated during the 2002 field season and re-investigation of the site revealed a surface lithic scatter of 49 pieces of flaked stone of various materials. No surface features were identified.

The site is located on a small moraine (45m east-west by 35m north-south) that is elevated 20-25m above surrounding terrain. Slope is steep on the west and north sides, which lead down to moderately flat terrain. Slope is gradual on the eastern and southern sides, where continuous hilly terrain begins. 33 Mile Loop Road is located 10m south of the crest of the moraine, approaching the site from north-east and veering southwest as it nears the crest. The moraine has been disturbed by recent activities and has experienced wind and water erosion. Due to these erosional factors a large portion of the moraine and some of the surrounding area has good surface visibility. Downslope, where erosional processes are not as severe, surface visibility is minimal.

Figure 24. General view of site XMH-00290, facing west

The entire site area has been heavily disturbed by recent activities. The road cut for 33 Mile Loop Road goes through the middle of the site and a cut for a jeep trail goes through the southern end of the site. In addition, vehicle tracks and mechanical activities (grading or bulldozing) are apparent throughout the site area. Two recent fire rings and a bench mark survey marker are situated at the moraine's crest, and there is modern trash scattered throughout the site area. The site was also being used as a parking lot for heavy equipment (Figure 3) in 2002. The moraine has been cleared of trees, and a clearing has been made for another jeep trail on the northeast side of the site that heads off to the northeast. The southwest portion of the site, located immediately south of 33 Mile Loop Road and west of the jeep trail that heads south, appears to have had soil dumped or pushed onto it. Shovel tests excavated in this area revealed very loosely compacted dark brown silt with a moderate density of gravels to an average depth of 40cm. Glacial till was most likely mixed with the soil that was dumped/pushed here and it was difficult to determine exactly where till began. Immediately south of these shovel tests glacial till was encountered at a depth of 40cm. Other tests that were excavated across the jeep trail, revealed glacial till at approximately the same depth. Thus, it appears that soil was dumped or pushed into this area by mechanical means. Although it could possibly be that soil deposition is simply greater in this area for some natural reason, the depth of the silt and absence of glacial till as compared with other tests at the site suggests that the soil was non-naturally deposited here.

Based on the locations of positive shovel tests, positive excavation units, and surface artifacts, the site was determined to cover an area approximately 65m x 35m. Surface artifacts were mapped and collected prior to any excavations. Shovel tests were placed systematically throughout the site area at 5m intervals, in the vicinity of surface artifacts. As positive shovel tests were identified, two additional shovel tests were excavated adjacent to these tests at 5m intervals. A total of 118 (30cm diameter) shovel tests were excavated at the site; all were excavated to glacial till. Nine shovel tests produced one or more artifacts. All artifacts collected from the site were pieces of flaked stone. Subsurface artifacts were found at an average depth of 10cmbs (centimeters below surface), and no deeper than 30cmbs.

Three 1m x 1m test units were excavated at the site. The test units were placed in areas of the site which had yielded both surface and subsurface artifacts. Two units were located on the crest of the moraine, and the third was located on the southeast side of the moraine. These units were excavated in three (5cm) levels to glacial till. Only one of the test units (test unit 1) was positive with artifacts found at a depth of 1-5cmbs. No subsurface features were identified at the site. Some evidence of burning was observed in test unit 1 that was due to either recent natural burning or burned material from the nearby fire rings.

Shovel tests and test units revealed that soil deposition at the site ranges from 6-66cm in depth. The majority of the site appears to have been disturbed by recent activities both on the surface and below, and thus determining natural soil deposition was difficult. The top of the moraine has been heavily disturbed by clearing and recent mechanical activities. Like other moraines in the area, this one most likely experienced wind and water erosion, but this is difficult to determine due to the extent of the non-natural disturbances.

Shovel tests and test units on the crest revealed a soil deposition of 30cm. Soil on the crest of the moraine in areas that have been wind and water eroded consists of loosely

compacted brown silt with a high density of gravels. Glacial till lies below this layer, at an average depth of 40cmbs and consists of very loosely compacted light brown silt sand with a very high density of gravels and cobbles. The area downslope from the top of the moraine has not been as significantly affected by wind and water erosion, but shows the effects of modern activities in that it is cleared of trees and heavily disturbed throughout. Soil in the few areas that appear not to have been heavily disturbed consists of loosely to moderately compact dark brown organically rich silt with little to no gravels and cobbles located immediately below the moss/root mat. Below this, soil consists of loosely to moderately compact brown silt with a low density of gravels to an average depth of 50cmbs. Glacial till is encountered immediately below this layer and consists of very loosely compacted silt sand with a high density of gravels and cobbles.

A total of forty-five pieces of flaked stone were found at the site, including five tool fragments (four retouched flakes and one biface fragment). The remaining pieces are lithic debitage. Material types include cherts and fine grained basalt.

Findings

Although XMH-00290 is a site which contains surface and subsurface artifacts, modern activity has extensively disturbed the area. Modern disturbance, most notably the roads cutting through the site and the grading and maintenance activities associated with these roads, has severely impacted the surface and soil deposition at the site. Site XMH-00290 has lost its integrity and therefore, is not eligible for inclusion in the NRHP.

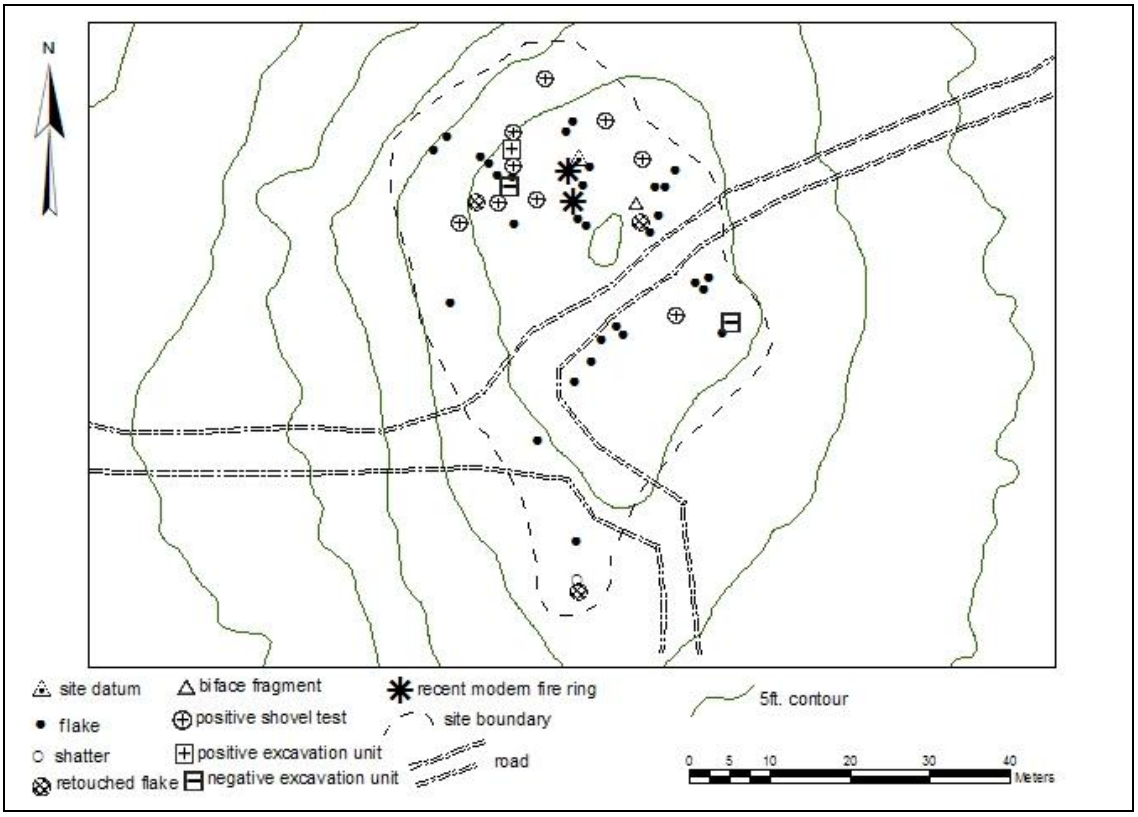

Figure 25. Map of site XMH-00290

XMH-00895
Latitude:
Longitude:
Determination: Eligible

Site XMH-00895 is located at the southern end of a north-south trending moraine, offering a good view to the south of Donnelly Dome, the Alaska Range, and the Granite Mountains. The closest water source is Sharon Lake, located approximately 250m to the south. Mary Lake is located roughly 500m to the east. A well-traveled game trail runs the length of the ridge. Some wind erosion is evident, and there is little to no soil deposition on top of the landform, though there is good deposition in the surrounding areas.

Site XMH-00895 was discovered during the 2002 field season when a banded chert retouched flake was found in a disturbed area near 33 Mile Loop Road. During a following visit to the site, crew members recovered a chert biface on the surface of an adjacent ridge. The site was evaluated during the 2004 field season. The surface was surveyed again, and a single flake was found near 33 Mile Loop Road in a disturbed setting. A 5-10m shovel test grid was established over the landform. Forty shovel tests were excavated to glacial till, although there was very little soil deposition on top (approximately 0-10cm). More substantial soil deposition (approximately 40-50cm) was found in the areas to the west and northwest of the moraine crest. One 1m x 1m test unit was excavated at the site.

Four shovel tests were positive: N5/W5 had one flake from 0-15cmbs, N10/W20 had one gray chert microblade core from 20-30cmbs, N20/W20 had seven flakes from 25-35cmbs, and N30/W20 had two red chert flakes from 35-45cmbs. A test unit was placed at N14/W20 between two positive shovel tests on the northwest slope and was excavated six levels to 60cmbd (centimeters below datum). 74 artifacts (primarily very small gray chert tertiary flakes) were recovered from the test unit, including a large flake tool (Figure 6) from 39cmbd. 28 artifacts or artifact concentrations were plotted *in situ* from 35-44cmbd. Almost 100 percent of the artifacts from the unit came from 35-45cmbd, and many were located in a concentration in the SE corner. A very obvious thin (1-2 cm), dry, compact, dark brown silt clay layer was found throughout the unit in level four (30-40cmbd). The layer was banded in places and bands ran both horizontally and at an angle. Artifacts and small charcoal pieces were found immediately underneath, above, and adjacent to this unique soil. A sample was collected. Photos were taken of artifacts *in situ* in the dark brown silt clay at 37cmbd. This clay layer was also present in some surrounding shovel tests, including N20/W20, where it was associated with other artifacts.

Figure 26. General view of site XMH-00895, facing northwest

Figure 27. Flake tool from test unit one of XMH-00895

Findings
With buried cultural material, XMH-00895 is in an excellent position to contribute to our knowledge of prehistoric land use patterns. *In situ* artifacts and soil stratigraphy indicate datable material and diagnostic artifacts may be present and could be used to date human use of the site, potentially contributing to a broader regional context. Site XMH-00895 is an intact archaeological site with integrity. The site is eligible for inclusion in the NRHP under Criterion D for its potential to yield information important in understanding the prehistory of the region.

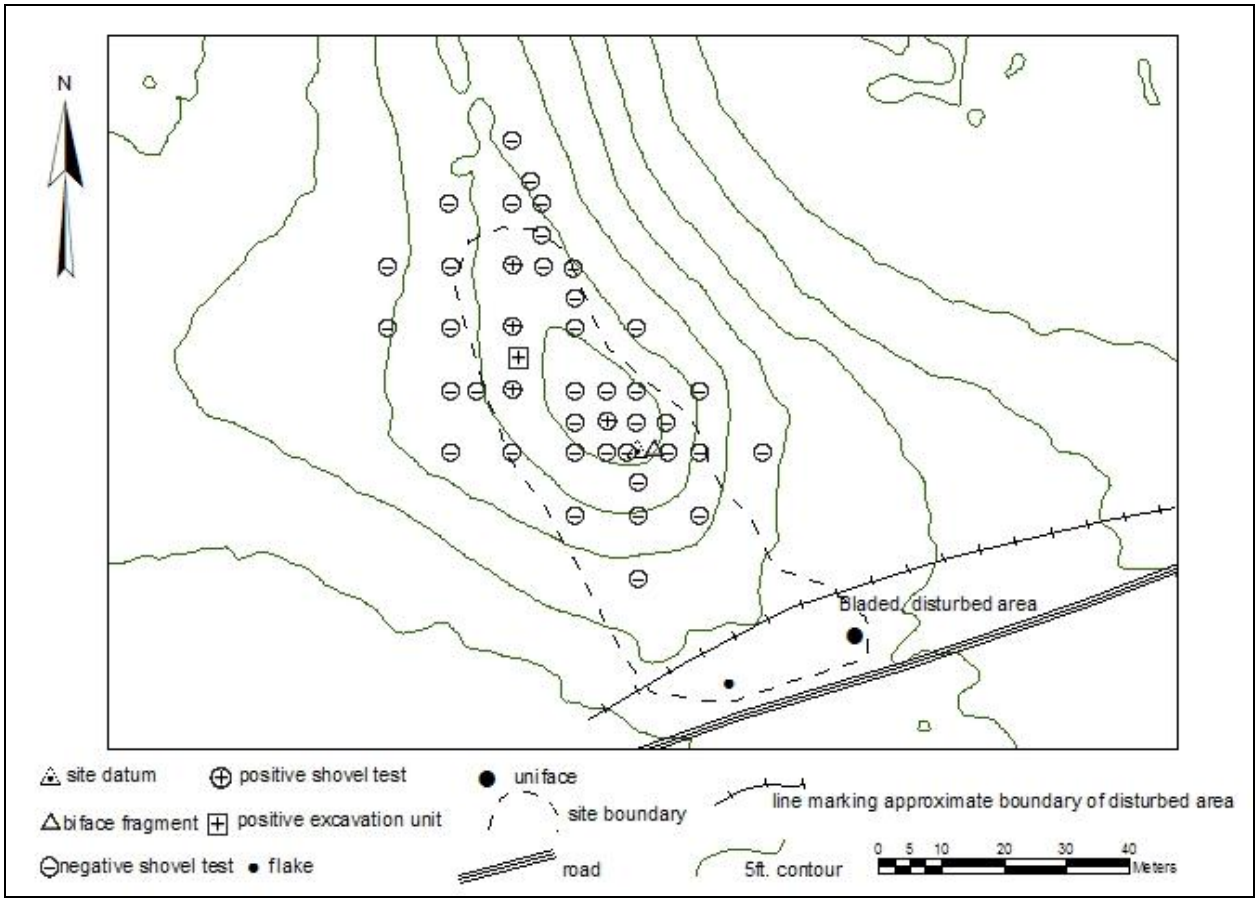

Figure 28. Map of site XMH-00895

XMH-01064
Latitude:
Longitude:
Determination: Not Eligible

Site XMH-01064 is located in the lowlands and is not associated with any nearby glacial moraines. The nearest known water is a marsh approximately 1 km to the southeast. No significant view of the surrounding landscape is possible. Surface visibility is relatively high due to a recent 1999 burn. Vegetation consists of dwarf scrub, forbs, and grasses.

Site XMH-01064 consists entirely of the grayish green chert flake core (FS1) that was originally found at the site in 2003. The flake core was collected from the site in 2006 in anticipation of future impacts to the site. The flake core is 67.20mm long, 47.78mm wide and weighs 209.60g. No additional artifacts were found during the Phase II investigation of the site. Shovel tests were systematically placed throughout the site area at intervals of 10m. A total of thirteen shovel tests were excavated. The depth of shovel tests varied, but all except one were excavated to glacial till. The shovel test located at 20E / 0N (from the site datum) was in an extremely wet, marshy area and therefore was not excavated. None of the thirteen shovel tests that were placed at the site contained any cultural materials. Based on the results of the survey and testing, the site area is estimated at approximately 5m x 5m.

Since no buried artifacts were found in the shovel tests, no 1m x 1m test units were excavated at the site. Soil thickness varied 10-45cm across the site. The site is located in a low lying, flat area, and soil is deposited rather randomly, consisting of loosely compacted, dark brown, organically rich loess to an average depth of 5cm. Below this organic horizon, the soil consists of moderately compacted yellow brown loess with a low density of gravels and cobbles. Glacial till is encountered below this loess deposit and consists of yellow brown sandy loess with an extremely high density of gravels and cobbles.

Findings

Pedestrian survey and thirteen shovel tests produced a total of only one artifact. This finding suggests that XMH-01064 is an isolated find. The paucity of cultural material indicates that XMH-01064 does not contain additional information that is important to our understanding of the prehistory or history of the region and is not eligible for inclusion in the NRHP.

Figure 29. Overview of XMH-01064, facing south

XMH-01303
Latitude
Longitude:
Determination: Eligible

Site XMH-01303 is located on a roughly north-south trending, forested moraine. Visible landmarks include the Granite Mountains to the southeast, Donnelly Dome to the south, and the Alaska Range to the south and west. The nearest water sources are a small unnamed pond located approximately 100m to the northwest and Fiddle Lake, which is located approximately 100m to the south. Additionally, Banjo Lake is located approximately 200m to the east. The view shed is approximately 180° to the south, because the moraine drops off in elevation in this direction. The remainder of the view shed is obscured by trees. Ground visibility is zero percent except on the road surface which cuts through the site, on which a scraper, flake, and angular debris were found.

Site XMH-01303 was discovered through pedestrian survey of the landform. One secondary light green rhyolite flake, one tertiary light green rhyolite or chert flake, and one gray chert scraper were found on the surface of the unpaved road which runs by the site. During Phase I investigations, two shovel tests were excavated at the site; one was positive. The shovel test contained 49 flakes and two pieces of a red chert uniface blade which refit.

For Phase II, shovel tests were systematically placed throughout the site area at intervals of 10m, radiating from the datum. A total of 25 new shovel tests were excavated. The depth of shovel tests varied, but all were excavated to glacial till. Three of the shovel tests (0E/10S, 10W/10S, 10E/20S) contained cultural materials. Five flakes were recovered from these three shovel test pits. Additionally, one red chert uniface was found in a disturbed area near the shovel test 20W/10S of the datum. Based on the results of the survey and testing, the site area is estimated at approximately 35m x 40m. The gray chert uniface was found approximately 60m to the west of the datum, on the road surface downhill from the site. This uniface was not included within the site boundaries because it is highly probable that this artifact was moved down the road/slope by erosional or human forces.

Due to time restraints, no 1m x 1m test units were excavated at the site. Soil thickness varied 10-40cm across the site. Soil consisted primarily of an approximately 5cm thick dark brown root mat, on top of yellow brown or dark brown loess (the cultural layer), on top of yellow brown till. Glacial till consists of yellow brown sandy loess with an extremely high density of gravels and cobbles.

Findings
A total of 60 artifacts were recovered from XMH-01303. Four were recovered from the surface and 56 were recovered from below the surface. The materials at the site include chert, basalt, quartz and an unidentified material. Based on the results of survey and testing the site area is estimated at approximately 35m x 40m.

Site XMH-01303 is a small but dense lithic site with both surface and buried components. With buried cultural material and formalized tools, XMH-01303 is in an excellent position to contribute to our knowledge of prehistoric land use patterns. *In situ*

artifacts and soil stratigraphy indicate datable material and diagnostic artifacts may be present and could be used to date human use of the site, potentially contributing to a broader regional context. Site XMH-01303 is an intact archaeological site with integrity. The site is eligible for inclusion in the NRHP under Criterion D for its potential to yield information important in understanding the prehistory of the region.

Figure 30. View of site XMH-01303, facing south

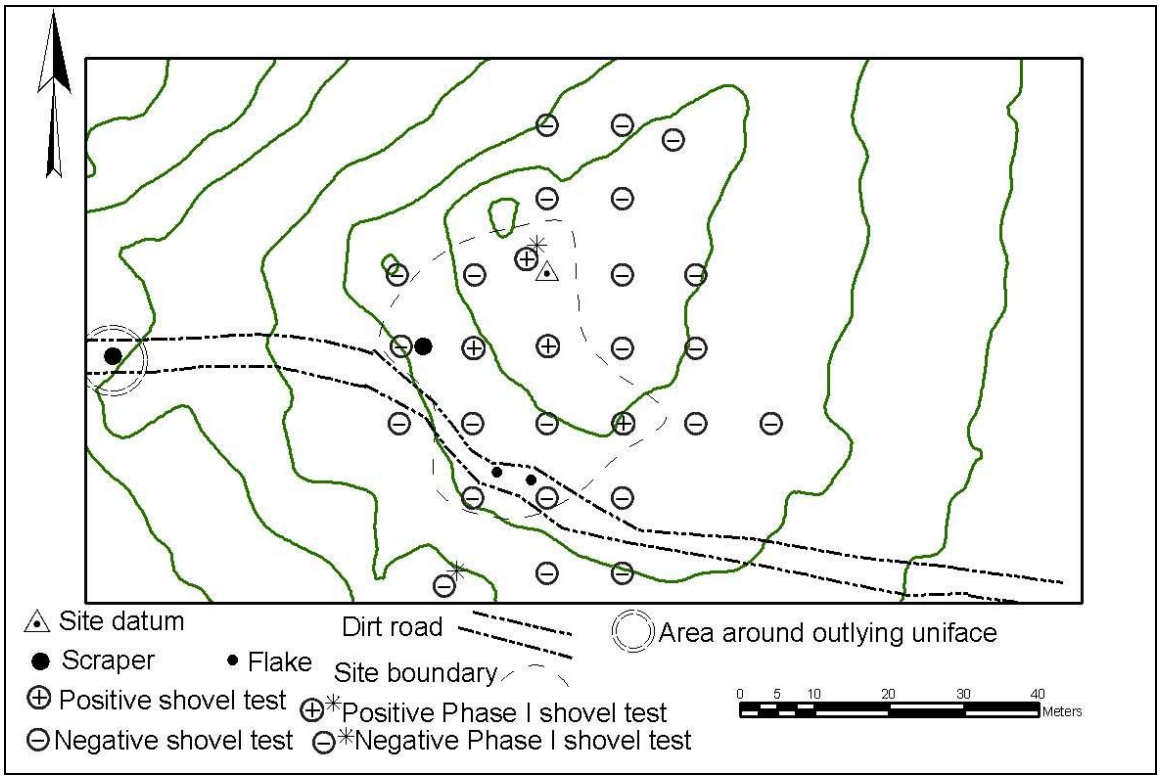

Figure 31. Map of XMH-01303

7.0 Survey and New Sites 2005

During the summer of 2006, three archaeological survey crews, each comprised of four archaeologists employed by CEMML, conducted a Phase I pedestrian survey for one major range development project (BAX), as well as several smaller projects on the DTA and Fort Greely.

Six thousand three hundred and eighty-one acres were archaeologically surveyed on the DTA during the 2006 summer field season, and a total of 26 new archaeological sites were identified. The following is a description of 23 of the new sites recorded in 2005. Sites XMH-01291 and XMH-01292, are described in Section 5.4 of this report. Description of site XMH-01303 can be found in this report section 6.0.

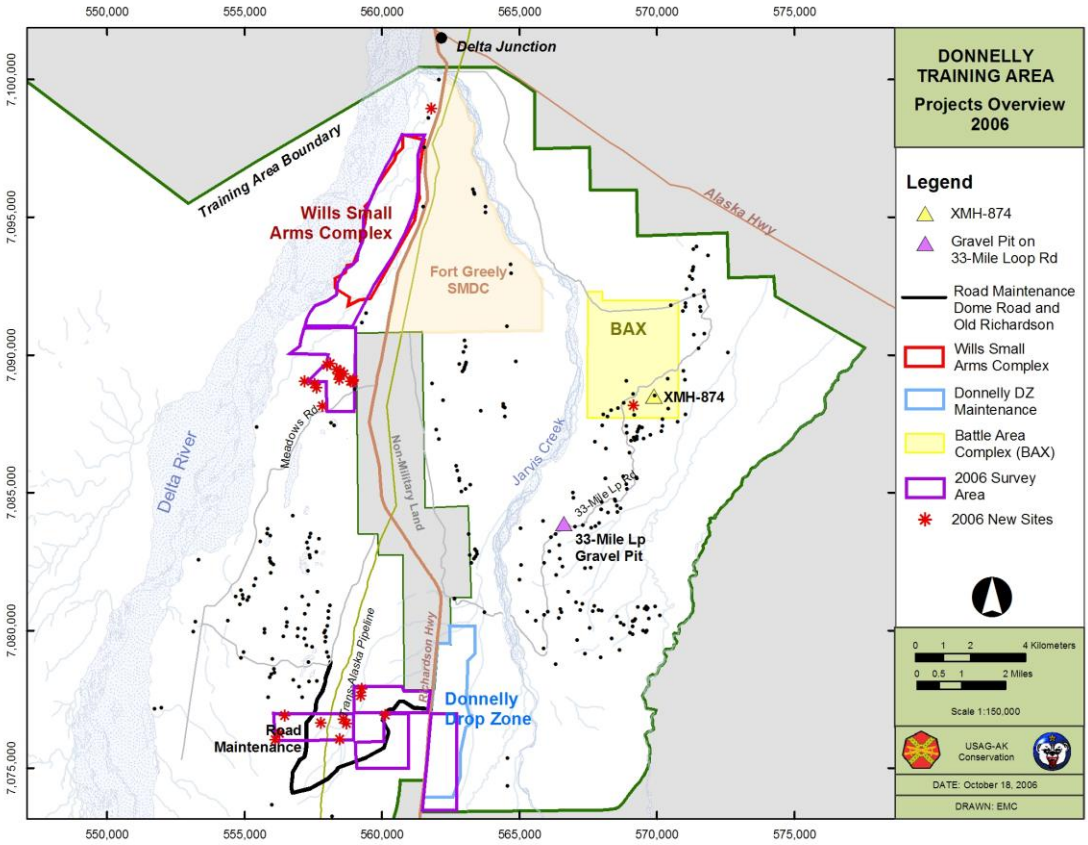

Figure 32. Areas surveyed on DTA 2002-2006

Table 4. Archaeological Sites Located in 2006

AHRS #	Easting	Northing	Project	NRHP Status
XMH-001278			ITAM 2006	Not Evaluated
XMH-001279			ITAM 2006	Not Evaluated
XMH-001280			ITAM 2006	Not Evaluated
XMH-001281			ITAM 2006	Not Evaluated
XMH-001282			ITAM 2006	Not Evaluated
XMH-001283			ITAM 2006	Not Evaluated
XMH-001284			ITAM 2006	Not Evaluated
XMH-001285			ITAM 2006	Not Evaluated
XMH-001286			ITAM 2006	Not Evaluated
XMH-001287			ITAM 2006	Not Evaluated
XMH-001288			ITAM 2006	Not Evaluated
XMH-001289			ITAM 2006	Not Evaluated
XMH-001290			ITAM 2006	Not Evaluated
XMH-001291			ITAM 2006	Not Evaluated
XMH-001292			ITAM 2006	Not Evaluated
XMH-001293			ITAM 2006	Not Evaluated
XMH-001294			ITAM 2006	Not Evaluated
XMH-001295			ITAM 2006	Not Evaluated
XMH-001296			ITAM 2006	Not Evaluated
XMH-001297			ITAM 2006	Not Evaluated
XMH-001298			ITAM 2006	Not Evaluated
XMH-001298			ITAM 2006	Not Evaluated
XMH-001300			ITAM 2006	Not Evaluated
XMH-001301			ITAM 2006	Not Evaluated
XMH-001302			ITAM 2006	Not Evaluated
XMH-001303			BAX 2006	Eligible

XBD-00271
Latitude:
Longitude:
Determination: Not Evaluated

Site XBD-00271 is located on the edge of a bluff overlooking the Delta River, very close to XBD-00270 (approximately 250 meters to the north). The nearest water source is the channel of the Delta River below the bluff to the west. View shed at the site is roughly 180° to the west, southwest, and northwest. The view in the other directions is obscured by tall aspens and spruce, therefore the view shed may have been greater in the past when the vegetation was different. Surface visibility is poor; the ground is only visible in a small area of the site (less than 20 percent) that is heavily trodden by animals and may be a wallow.

There is a road (more of a dirt track) through the woods immediately to the south of the site. Additionally, the area in which the artifacts are located appears to be in a high-traffic animal area (possibly a wallow). The edge of the bluff is in danger of erosion. Eleven artifacts were found on the surface at the site: five light greenish gray chert

flakes, three dark gray chert flakes, one mottled light and dark gray chert flake, one gray chert flake with reddish spots, and one mottled gray and light gray chert flake with reddish spots. No shovel tests were excavated and no artifacts were collected.

XMH-01278
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01278 is located on a moraine trending roughly northwest-southeast. The nearest water source is a small pond located west of the site approximately 200m. The view shed at the site is a spectacular 360°. The Alaska Range is visible to the west and south, Donnelly Dome can be seen in the southwest, and the Granite Mountains are visible to the southeast. Surface visibility is estimated at 50 percent due to the ravages of the 1999 forest fire in this area.

The site was discovered through pedestrian survey of the landform when 16 tertiary flakes made of chert and a white-colored unidentified material were observed on the surface of the landform. The flakes were left in situ. No shovel tests were excavated.

Figure 33. General view of site XMH-01278, facing south

XMH-01279
Latitude:
Longitude
Determination: Not Evaluated

Site XMH-01279 is located on a low bench that extends off of a high glacial moraine. The nearest water source is a small unnamed pond located 75m to the southwest. The view shed is 180° to the southwest. Visible landmarks include the Granite Mountains to the southeast, Donnelly Dome to the south, and the Alaska Range to the southwest. Surface visibility is estimated to be 40 percent.

The site was discovered through pedestrian survey of the landform when one tertiary gray flake and two tertiary dark gray basalt flakes were found on the surface. The flakes were left in situ. No shovel tests were excavated.

Figure 34. General view of site XMH-01279, facing east

XMH-01280
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01280 is located on a moraine that was burned during a 1999 forest fire. The fire exposed portions of the ground surface; on one of these exposed patches of surface a crew member found a side notched gray basalt projectile point. Further examination of the surface revealed a tan rhyolite biface fragment and 7 tertiary (6 gray chert and one light gray chert) flakes. The nearest water source is a small pond located approximately 100-150m to the west (downslope from the site). The view shed at the site is a full 360°. Visible landmarks include: the Granite Mountains to the east, the Alaska Range to the south and southeast, Donnelly Dome to the southeast, and the Delta River to the northwest. Surface visibility at the site is approximately 25 percent.

The projectile point and the biface fragment were collected. The flakes were left in situ. No shovel tests were excavated.

Figure 35. General view of site XMH-01280, facing west

Figure 36. Artifact from XMH-01280

XMH-01281
Latitude
Longitude:
Determination: Not Evaluated

Site XMH-01281 is located on a low bench extending to the south off of a higher moraine. The bench is situated within a small depression. The area was burned in a 1999 forest fire. The nearest water source is a small pond located approximately 50m to the south. The view shed at the site is 180° to the south. The view is blocked to the north by a higher moraine. Visible landmarks include Donnelly Dome and the Alaska Range to the south and the Granite Mountains to the southeast. Surface visibility at the site is approximately 20 percent. This surface has been exposed due to the effects of the forest fire. One gray chert flake tool was found on the surface of the site. No artifacts were collected from the site. No shovel tests were excavated.

Figure 37. General view of site XMH-01281, facing south

XMH-01282
Latitude
Longitude:
Determination: Not Evaluated

Site XMH-01282 is located on a small ridge to the east of a larger moraine. The site overlooks a small ravine filled with black spruce and birch trees. The moraine on which the site is located trends south-southwest/north-northeast. View shed is good, approximately 180° to the east. Donnelly Dome is very near the site and is visible to the south. The Granite Mountains are visible to the east and the highest tips of the Alaska Range to the southeast. Surface visibility is approximately 10 percent with much of the visible area situated on a slope. The nearest water source is a small stream located approximately 125m to the east in the ravine

Site XMH-01282 was discovered through pedestrian survey of the landform. One flake and one possible flake (quartz) were found on the surface. No shovel tests were excavated and no artifacts were collected.

Figure 38. General view of site XMH-01282, facing south-southeast

XMH-01283
Latitude:
Longitude:
Determination: Not Evaluated

The positive shovel test which defined site XMH-01283 is located on a small east-facing bench situated below a larger moraine. The moraine extends north-south and overlooks a small ravine filled with black spruce and birch trees. The moraine on which the site is located trends south-southwest/north-northeast. The view shed is approximately 180° to the east. Visible landmarks include Donnelly Dome to the south, the Granite Mountains to the east, and the Alaska Range to the southeast. Surface visibility is zero percent. The nearest water source is a small stream located approximately 100m to the east in the ravine

Site XMH-01283 was discovered through pedestrian survey and shovel testing of the landform. One banded chert tertiary flake was discovered in a shovel test pit. Two shovel tests were excavated, and the artifact was collected.

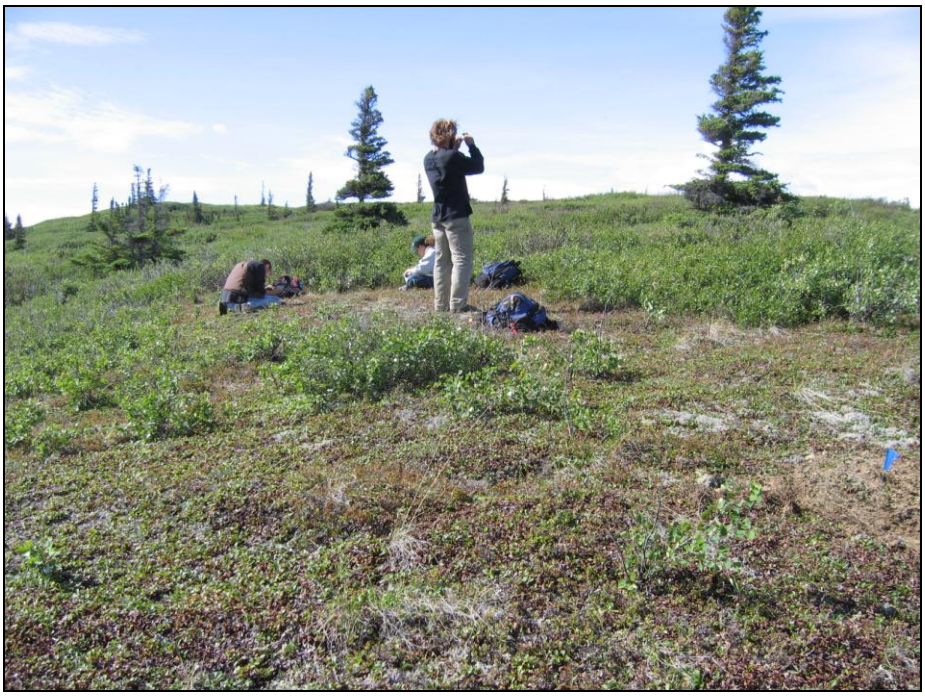

Figure 39. General view of site XMH-01283, facing south

XMH-01285
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01285 is located on a moraine overlooking a small ravine with a small creek running through it to the east. To the west the landscape extends at a near constant elevation towards the pipeline. The moraine has approximately 80 percent surface visibility. The limited vegetation on the moraine consists of low scrub, a few scattered spruce trees, and moss/lichen/forb. The nearest water source is the small creek located approximately 200m east in the small ravine. The view shed from the site is good, approximately 180° to the east. Donnelly Dome is very near the site and is visible to the south. The Granite Mountains are visible to the east, and the highest tips of the Alaska Range to the west. The majority of the view to the west is blocked by a higher ridge.

Site XMH-01285 was discovered through pedestrian survey of the landform. One flake and one piece of angular debris were found on the surface. No shovel tests were excavated, and no artifacts were collected.

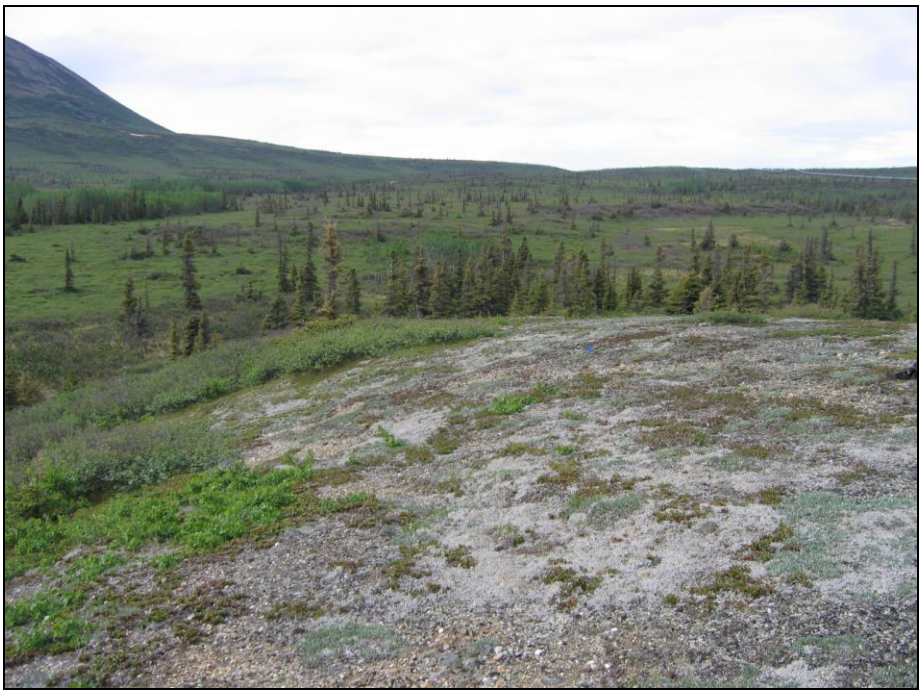

Figure 40. General view of site XMH-01285, facing south

XMH-01286
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01286 is located on the surface of a heavily disturbed moraine. There are tracks from some piece of large machinery running across the site. It appears that large machines have driven over the area on their way to mine gravel a little to the east of the site. View shed is approximately 180° to the east. Visible landmarks include Donnelly Dome to the south, the Granite Mountains to the west, and the tops of the Alaska Range to the west. The majority of the view to the west is blocked by a distant higher ridge. The nearest water is a small lake situated approximately 35m to the north/northwest. Surface visibility is 95 percent; it is unclear as to how much this is natural or due to disturbance from modern activities.

The site was found through pedestrian survey of the landform. Three artifacts were found at the site: one tertiary dark gray basalt flake, one tertiary light gray chert flake, and one dark gray basalt (possibly retouched) flake. The possible flake tool is 4.7cm long, 2.2cm wide, and weighs 20g. No artifacts were collected, and no shovel tests were excavated.

Figure 41. General view of site XMH-01286, facing south

XMH-01287
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01287 is located on a moraine trending north-south, sloping steeply to the east to a gravel pit (possibly utilized by Alyeska) then a ravine, and which gradually increases in elevation to the west in the direction of the pipeline. View shed is good—approximately 180° to the east. Visible landmarks include Donnelly Dome to the south, the Granite Mountains to the west, and the tops of the Alaska Range to the west. The majority of the view to the west is blocked by a distant higher ridge. The nearest water source is a small creek/bog running in the ravine to the east (approximately 200m away). Surface visibility is 75 percent. The area is heavily disturbed to the east by the gravel pit, but there is a good chance that subsurface is intact to the west.

The site was found through pedestrian survey of the landform. Two artifacts were found at the site: a rhyolite (tan and brown) tertiary flake and one flake tool made of light gray chert or possibly rhyolite. The flake tool is 3.5cm long, 2.7cm wide at the base, and weighs 7g. No artifacts were collected, and no shovel tests were excavated.

Figure 42. General view of site XMH-01287, facing southwest

XMH-01288
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01288 is located on the southern end of a north-south trending moraine. The site is located on a high point of the moraine just before it drops down 15m. There are 34 small lakes within the area of the site. The nearest body of water is a small pond 70m south of the site location. There are also eight small unnamed lakes that are parallel with each other and are 800m to the west. The view shed of the site is 360°. The most visible landforms are Donnelly Dome to the southeast and the Delta River to the west. Surface visibility is estimated to be 70 percent.

The site was located by pedestrian survey of the landform. The site was found on the surface. Artifacts consist of 48 chert flakes, one basalt microblade, and one chert uniface scraper. The scraper was collected.

Figure 43. General view of XMH-01288, facing south

Figure 44. Artifact from XMH-01288

XMH-01289
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01289 is located on a saddle of a north-south trending moraine. There are several unnamed lakes located to the west of the site, however none are visible. The Delta River is also located to the west. The most visible landform is Donnelly Dome to the southeast. The view shed at the site is estimated at 60°. Surface visibility is estimated to be 50 percent

The site was located through pedestrian survey of the landform. The site was found on the surface. Artifacts consist of 24 chert flakes. No shovel tests were excavated at the site. No artifacts were collected from the site.

Figure 45. General view of site XMH-01289, facing southwest

XMH-01290
Latitude
Longitude:
Determination: Not evaluated

Site XMH-01290 is located at the southern end of a north-south trending moraine. The site is located to the east of several small unnamed lakes that are more than 1km away. The most visible landform is Donnelly Dome to the southeast. The Delta River is located to the west. The view shed is estimated to be 180°. Surface visibility is estimated to be 70 percent

The site was located by pedestrian survey of the landform. The site was found on the surface. Artifacts consist of one chert bifacial point fragment exhibiting an impact fracture on the ventral side and one complete basalt bifacial point. No shovel tests were excavated at the site. Both artifacts were collected.

Figure 46. General view of site XMH-01290, facing northeast

Figure 47. Artifact from XMH-01290

XMH-01293
Latitude
Longitude
Determination: Not evaluated

Site XMH-01293 is situated on a small north-south trending moraine that is adjacent to a small unnamed kettle lake to the southwest. The site is recessed within a system of surrounding ridges. The size of the landform is estimated to be 80 x 20m. Surface visibility is estimated to be 15%. The artifacts are located on a bench within the landform. Donnelly Dome is visible in the south. The elevation is 500m.

The site was located through pedestrian survey. Artifacts include one gray chert unifacial thumb scraper, one gray chert tertiary bifacial flake, and one gray basalt tertiary flake. The scraper was collected. No shovel tests were excavated at the site.

Figure 48. General view of XMH-01293, facing north

Figure 49. Artifact from XMH-01293

XMH-01294
Latitude
Longitude:
Determination: Not evaluated

Site XMH-01294 is located on a narrow landform running west to east and is approximately 50m north of a small recessed pond. The landform is roughly 8m above the lake elevation and is surrounded by a moraine ridge system. The estimated size of the landform is 10m x 60m. Surface visibility is estimated to be 60 percent. Because the view is blocked by both trees and larger moraines in the area, the view shed is estimated to be 0°. To the northeast is another recessed area. The most visible landform is Donnelly Dome to the south

The site was located by pedestrian survey of the landform. No shovel tests were excavated. Artifacts include two primary and two tertiary tan chert flakes. No artifacts were collected.

Figure 50. General view of XMH-01294, facing north

XMH-01295
Latitude
Longitude:
Determination: Not evaluated

Site XMH-01295 is located towards the eastern end of an east-west trending moraine. The landform is estimated to rise 10m off of the surrounding ground surface and is 505m in elevation. The landform is part of a system of east-west trending moraines that are located throughout the L13 block. The nearest source of water is a small kettle lake/pond that is located 100m to the north. The size of the landform is estimated to be 60m x 30m. Surface visibility is estimated to be 80 percent. The view shed is 360°.

The site was discovered by pedestrian survey of the landform. A total of 15 artifacts were discovered including six basalt flakes, eight pieces of basalt angular debris, and two basalt cobble cores that refit. No artifacts were collected. No shovel tests were excavated.

Figure 51. General view of XMH-01295, facing north

XMH-01296
Latitude
Longitude:
Determination: Not evaluated

Site XMH-01296 is located on top of a very high east-west trending moraine. The artifacts were found toward the eastern edge of the landform on a steep slope. The nearest body of water is a small unnamed kettle lake that is 150m southwest from the site. The OP road is located to the east approximately 150m. The Delta River is to the west. The elevation is 530m. The view shed is 180° towards the southwest. Surface visibility is estimated to be 20 percent.

The site was discovered through pedestrian survey of the landform. Artifacts include one secondary gray banded chert flake, two tertiary gray banded chert flakes, and one tertiary fine grained basalt flake. Because of the steep grade of the landform, the artifacts may have moved downward from storm activity and water erosion. No shovel test pits were excavated in 2006; however, the scatter is located 1m away from a shovel test pit excavated during a previous season.

Figure 52. General view of XMH-01296, facing west

XMH-01297
Latitude:
Longitude:
Determination: Not evaluated

Site XMH-01297 is situated on a bench below and to the south of an east-west trending moraine. Surface visibility is estimated to be 40 percent. Because trees surround the area, the view shed is estimated to be 0°. The most visible landform is Donnelly Dome to the south. Landmarks include the OP road to the north. The nearest body of water is a pond that is situated 100m to the southwest.

The site was discovered through pedestrian survey of the landform. Artifacts include one tertiary basalt flake. No shovel tests were excavated at the site. No artifacts were collected.

Figure 53. General view of XMH-01297, facing east

XMH-01298
Latitude
Longitude:
Determination: Not evaluated

XMH-01298 is located in the middle of an east-west trending moraine. Because the site is surrounded by trees, the view shed is estimated to be 0°. Surface visibility is estimated to be 40 percent. Site elevation is 514m. There are no bodies of water immediately visible from the location of the site. The nearest body of water is an unnamed kettle lake that is 600m southeast from the site. The Delta River is located to the west

The site was discovered by pedestrian survey of the landform. The artifact found at the site is an obsidian notched projectile point base. The artifact was located on a gentle slope towards the western edge of the landform. The artifact was collected. No shovel tests were excavated.

Figure 54. General view of XMH-01298, facing west

Figure 55. Artifact from XMH-01298

XMH-01299
Latitude
Longitude:
Determination: Not evaluated

XMH-01299 is situated upon a north-south trending moraine that buttresses two adjacent moraines. On the western edge of the knoll is an east-west trending moraine. Towards the eastern edge of the knoll is a north-south trending moraine. The nearest bodies of water are two unnamed kettle lakes. One is 30m southwest from the site. The second kettle lake is to the northwest and is approximately 100m from the site. The most visible landmark is Donnelly Dome to the south. The site elevation is 500m. Surface visibility is estimated to be three percent. Because of the many trees in the area and higher moraines that obstruct the view from the site, the view shed is estimated to be 0°.

The site was discovered by shovel testing of the landform. A total of eight shovel test pits were excavated. There was one positive shovel test pit. Artifacts include a single tertiary gray chert flake.

Figure 56. General view of XMH-01299, facing north

XMH-01300
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01300 is located on a long low moraine connecting two higher moraines in an area with moraines and kettle ponds scattered throughout. View shed from the site is poor as the moraine is lower in elevation than surrounding moraines. It is approximately 90° to the southeast. Donnelly Dome is visible to the south. Surface visibility is approximately 95 percent on the crest of the low moraine due to the forest fire that occurred here in 1999. The nearest water source is a small pond located approximately 250m to the northwest. However, there are kettles scattered throughout the area that

may have held water bodies at some point in time.

Site XMH-01300 was discovered through pedestrian survey of the landform. One dark gray basalt tertiary flake and one light green chert or rhyolite (the material type was unclear) tertiary flake were found on the surface. No shovel tests were excavated and no artifacts were collected.

Figure 57. General view of XMH-01300, facing west

XMH-01301
Latitude:
Longitude:
Determination: Not Evaluated

Site XMH-01301 is located on a low bench (running roughly southwest-northeast) extending between two higher moraines. The area in which the site is located is filled with moraines and kettles. View shed from the site is poor as the moraine is lower in elevation than surrounding moraines. The view shed is approximately 180° to the south. It is blocked to the north by higher moraines. Donnelly Dome is visible to the south, the Alaska Range is visible to the south and southwest, and the Granite Mountains can be seen to the southeast. Surface visibility is approximately 90 percent due to the forest fire that occurred here in 1999. The nearest water source is a small, apparently ephemeral, pond located approximately 50m to the west

Site XMH-01301 was discovered through pedestrian survey of the landform. One secondary light gray basalt flake, possibly retouched, was found on the surface. This flake was burned on one side, most likely during the 1999 forest fire. No shovel tests were excavated, and no artifacts were collected.

Figure 58. General view of XMH-01301, facing southwest

XMH-01302
Latitude
Longitude:
Determination: Not Evaluated

Site XMH-01302 is located on an east-west trending moraine extending off to the east from a larger moraine. The view shed is approximately 270°. The view is blocked to the west by a higher moraine. Visible landmarks include: Donnelly Dome to the south, the Alaska Range to the south and southwest, the Granite Mountains to the southeast, and the Delta River to the northwest. Surface visibility is approximately 95 percent due to the forest fire that occurred here in 1999. The nearest water source is a small, apparently ephemeral, pond located approximately 50m to the south

Site XMH-01302 was discovered through pedestrian survey of the landform. One secondary light green rhyolite flake and one tertiary light green rhyolite or chert flake were found on the surface. No shovel tests were excavated, and no artifacts were collected.

Figure 59. General view of site XMH-01302, facing east

8.0 Protection and Mitigation of Effect

8.1 Site XMH-00895, located along 33-Mile Loop Road

Site XMH-00895 Is located on a high point next to 33 Mile Loop Road. An ATV trail branches off from 33 Mile Loop Road and goes over the site. A full description of the site is in section 6.0 of this report. The best way to protect this archaeological site is to block off the ATV trail and allow the natural vegetation to grow back, providing further cover and protection for the archaeological resources. The ATV trail was blocked by placing several large boulders at its entrance. The DTA Archaeologist Aaron C. Robertson supervised the construction of this barrier.

Figure 60. Boulders blocking access to archaeological site XMH-00895

9.0 Updated Site Information

In 2004 USAG-AK archaeological surveys in the northern part of DTA East located two sites (XMH-01177 and XMH-01178) during the summer field season (Raymond-Yakoubian and Robertson 2005). These sites were subsequently given AHRS numbers identifying them as being located in the Mt. Hayes quad. However, it was later determined that these two sites are in the Big Delta quad and not the Mt. Hayes quad. These two sites have since been given their appropriate AHRS prefixes and renumbered. Site XMH-01177 is now XBD-00269 ,and XMH-01178 is now XBD-00270.

Figure 61. Restricted Figure. Removed for public use of document**.**

9.1 New Artifacts found at site XMH-01160

XMH-01160
Latitude:
Longitude
Determination: Not Eligible

Site XMH-01160 is located on a northwest-southeast trending glacial moraine, which 33 Mile Loop Road follows. The site is on a large high point where 33 Mile Loop Road and a secondary dirt road intersect. The nearest water sources are Fiddle Lake, which is approximately 300m to the southeast, and Bow Lake, which is 350m to the southwest. Neither of the lakes are visible from the site. The view shed is mostly obscured by trees, but Granite Mountain is visible to the southeast. Surface visibility is seventy-five percent across the undisturbed portion of the site. However, much of the site has been heavily disturbed by the two roads crossing it, by many ATV trails extending away from the road, and by a cleared parking area next to the intersection. Additionally, the area has been cleared of trees in various places along the road by mechanical equipment. The site has been used as both a military bivouac and a hunting camp.

Site XMH-01160 consists of six artifacts: four surface artifacts and two subsurface artifacts. During the initial investigations of the site in 2003, two artifacts, a chert flake and an obsidian microblade section, were found on the road surface and were collected. The following year, during the site evaluation, two chert tertiary flakes were recovered from one shovel test. In 2006, two artifacts (a small scraper and a flake) were located on the surface of the road on the eastern side of the site. The scraper was collected. Site was evaluated during the 2004 field season and was determined not eligible for listing in the NRHP (Raymond-Yakoubian and Robertson 2005).

Figure 622. Artifact from XMH-01160

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